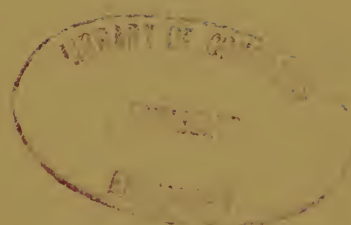
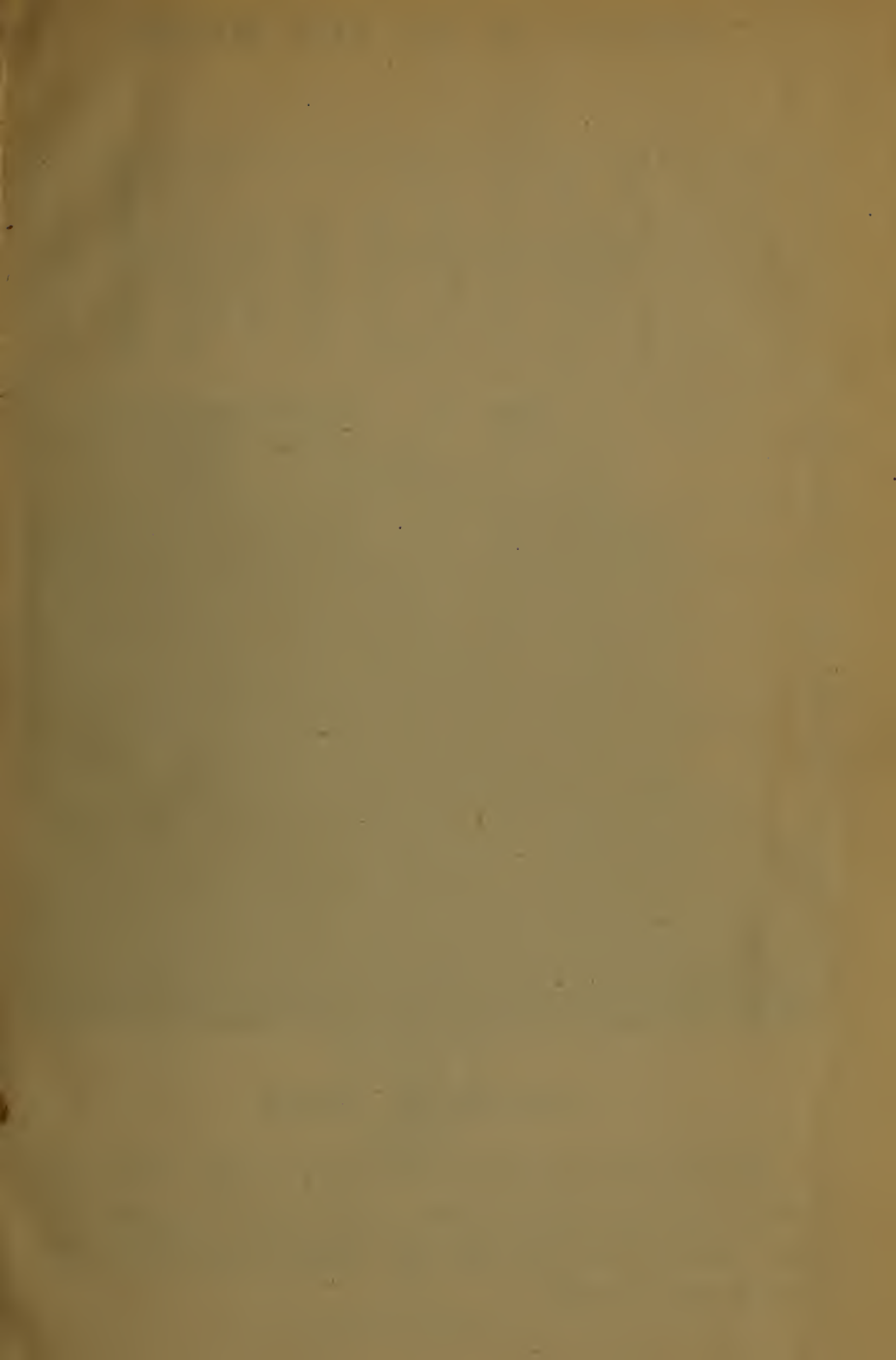


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TUNSTALL ON THE BATH WATERS.



STATISTICAL TABLE

Shewing the proportion of cases per cent. cured and relieved by the Bath Waters. The cross lines represent the numbers cured, and the faint lines those who derive great benefit.

THE
BATH WATERS:

THEIR
USES AND EFFECTS IN THE CURE AND RELIEF
OF VARIOUS
CHRONIC DISEASES.

BY
JAMES TUNSTALL, M.D., M.R.C.P.,
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its Resident Medical Officer.*

Fifty Edition, Revised and in part Re-written.

BY
RICHARD CARTER, M.D.,
Surgeon to the Bath Mineral Water Hospital.



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AUTHOR'S PREFACE.

It is most gratifying to an Author that his work originally published nearly a generation ago should have run through four large editions, and that a fifth should be demanded by the public.

When, however, my publisher in the early part of the present year informed me that a New and Revised Edition was called for, I felt that having retired from active practice some twelve years since, it was due to the profession and the public that the task of revision should be confided to another.

In order that every improvement which the rapid progress of medicine and its allied sciences have introduced for the alleviation of the various disorders amenable to the Bath Thermal Treatment should be

practically discussed, I applied to my friend DR. CARTER to undertake the Editorship, a Gentleman whose daily experience as Surgeon to the Bath Mineral Water Hospital peculiarly fits him for such a work.

I have carefully revised the various sheets as they have passed through the press ; and have only to express a hope that the work, under its present careful editing, may maintain its high reputation as a practical guide, both to the doctor and his patient.

JAMES TUNSTALL.

Bath ; August, 1879.

THE BATH WATERS.

INTRODUCTORY CHAPTER.

BEFORE commencing to treat of the various diseases for which the Bath Waters are useful, I wish to impress upon my readers that a course of Bath Waters requires to be entered upon with confidence, and to be conducted with caution. I shall endeavour calmly to inquire into their efficacy in the various diseases in which they are more generally recommended, and shall point out that functional and not structural diseases are those most likely to be benefited, and that an absence of inflammatory action or arterial excitement is essential to their safe employment.

The medical officers of the Bath Mineral Water Hospital possess an advantage which private practitioners cannot have. Each case must be reported by the medical attendant at home, and its suitability for thermal treatment is decided on in the

absence of the patient by the medical board of the hospital, who reject all those that appear to be improper, or apply for further information where the written case is obscure. In private practice, on the other hand, patients arrive, and frequently commence the use of the waters by the advice of their own medical attendant, residing at a distance from the springs. These cases frequently do not do well, and the waters receive discredit, whereas a proper course, judiciously superintended, would have been attended with advantage.

I hold it to be our duty in this city to give every suitable case a fair trial; and where the waters are inapplicable, to give the patient the option of returning home. It were well, indeed, if practitioners at a distance would take the opinion of a medical friend at Bath, prior to putting an invalid to the expense of a fruitless journey, of which I have seen many melancholy instances.

A treatise on the mineral waters of Bath would be incomplete, without special reference to the advantages presented as a residence for invalids.

First of all, the position of Bath in an extensive valley, through which a river above the tidal influence constantly flows, preserves a current of air, which removes all tendency to unhealthy exhalations, even in her lowest situations; for

which reason the city is singularly free from febrile and other diseases which, in various other localities, rage epidemically at particular seasons, its rate of mortality being 21 per 1000 per annum.

There is a special feature in the mortality returns of Bath, not seen so markedly in those of any other city in the kingdom, viz.:—the very large proportion of deaths of persons of advanced age. The cause of this and its influence in maintaining the death-rate at or near the figures given above have been ably discussed by Dr. Brabazon, the Medical Officer of Health, in a special report recently presented by him to the Sanitary Authority of the city. In it he points out that whereas in Bristol and Clifton there were in 1871 only 3303 persons above 65 years of age, or about a 55th of the entire population, there were in Bath no fewer than 4078 or but little over one 12th. As the birth-rate of the city is low this large population of aged residents “must consist” as he remarks “of individuals who are, as it were, introduced and born to Bath at the age of 60.” Such a circumstance has the peculiarity of raising the death-rate at the same time that it testifies to the healthfulness of the city. To quote Dr. Brabazon’s words “for these aged, Bath has been aptly described as a cradle in which they calmly and quietly rest until nature rocks them to sleep.”

The geological position of the city is also favourable to health: ascending from the lias through the oolitic series, the porosity of the soil speedily imbibes the superabundant moisture, which, from the gradual descent of the neighbouring hills to the river, is carried away in a few hours: thus, it possesses the three essential requisites of life—good air, good water, and a soil singularly healthy.

With regard to climate, Bath has, from observations continued for many years, been found to be on an average five degrees of Fahrenheit's thermometer warmer than any inland town in England during the winter months; but, although this be the case with the city in its limited sense, the extent of its suburbs, ascending as they do the hills in every direction, and proceeding along the sheltered valleys, offers for selection a variety of climate and aspect, by which all the advantages of a number of places, usually recommended for a residence, are combined with the comforts and economy which attend the vicinity of a wealthy and populous city.

It should be remarked also that though warmer than other towns in winter, it is not characterized by the extreme heat that marks many of them during the height of summer; and what perhaps is of most importance to invalids is the fact that the mean *daily* range of temperature, especially

during winter and spring, when fluctuations are most felt, are less than in many other places of about the same latitude.*

Another variety of climate is frequently perceived, arising from the prevalence of westerly winds: these being impregnated with saline particles from the Atlantic ocean, diffuse health and spirits to all within range of their influence; and here I may remark, that the fertility of Ireland and the West of England is to be attributed, in a great measure, to the prevalence of these westerly winds.

The more populous parts of the city have a southern aspect, descending from Lansdown to the banks of the Avon; with a prevailing westerly breeze, the river has an under-current of air proceeding from the eastward; thus combined causes are constantly in action to purify the city.

The various natural advantages which this city presents, in comparison with others, might be dilated upon until my readers were weary of the subject; but one great beauty must be noticed. From the variety presented by the environs of the city, we can always choose an interesting and healthy walk: the hills, the vales, and the pretty

* On this subject see a very able paper by the Rev. Leonard Blomefield, M.A., F.L.S., F.G.S., published in the Proceedings of the Bath Natural History and Antiquarian Field Club, 1875.

sequestered villages, with their varied views, exceed in picturesqueness and subdued grandeur those presented by any other celebrated locality in England.

Bath presents great advantages in reference to comfort and economy. The Great Western Railway has made it almost a suburb of London, and, by its various branches, brought it within an easy distance of the watering-places on the South and West Coast and the whole of Wales. The Midland Railway gives it a direct railway communication with the North, and by means of the Somerset and Dorset with London and the South, whilst the steam navigation between Bristol and Ireland is increasing in efficiency and importance every day bringing it thus into easy communication with the sister island. Its Lodging-houses are not the mere lath-and-plaster erections of yesterday, run up to last out a building lease, but are substantial residences of freestone. Erected without regard to expense, when Bath was the chosen city of gaiety and fashion, they astonish the stranger with their magnificence and comfort; no meretricious ornament is obtruded on our notice: their quiet air of gentility and moderate rental are their best recommendation.

The New Market, recently constructed, is one of

the best, cheapest, and most commodious in the kingdom. Railway communication with the coast supplies it with a profusion of fresh fish; poultry of every variety is raised in the neighbourhood, and also brought from Ireland. The pasture lands of Gloucester, Somerset, and Wiltshire, produce a constant supply of meat, butter, and cream of the first quality. Nor is it alone in the article of food that Bath is an economical residence. Proximity to the Somersetshire coal fields considerably reduces the price of fuel when compared with the metropolis and other inland towns.

As a place of education, it offers great advantages; professors of eminence have always made it their residence; and a well-endowed grammar school; proprietary colleges—Church of England and Dissenting; a school for the orphan daughters of military officers; a ladies' college; high school for girls, and various private scholastic establishments of the highest class, are among its advantages.

Bath has always been considered the cradle of musical talent, an accomplishment cultivated with great care, not only in public, but in the agreeable private *réunions*, which are distinguished by an ease and urbanity unknown in places frequented for the season of a mere temporary sojourn.

The Horticultural Fêtes at the Sydney Gardens, acknowledged to be the best of their class, are among the special features of Bath summer amusements; they attract numerous visitors, and are attended by growers and exhibitors from all parts of the kingdom.

The Theatre, erected upon the site of that burnt down in 1862, is one of the most elegant out of London, and the dramatic company is generally one worthy of an intellectual and critical audience.

In rides and drives Bath is also pre-eminent. The Victoria Park was laid out with an earnest desire that while the beautiful was carefully cultivated, the useful should have its share of attention, so that it has in a few years become both a fashionable and health-improving promenade. Connected by means of the Freeman's estate, now about to pass into the hands of the Corporation, with the heights of Sion hill and Lansdown, it combines every variety of town and country walk, with views of the rich undulating country which lies between Bath and Bristol; while its splendid collection of coniferæ, diffusing their healthful terebinthinate odour and presenting every gradation of foliage from the most exquisite and delicate gracefulness to sombre and heavy masses of shade, constitutes a special and most attractive feature of the park.

Bathwick has its Cleveland Walk, from which a most beautiful view of the city and environs is to be obtained ; while the Sydney Gardens form a delightful promenade, combining both privacy and comfort.

To dilate upon the amusements which are provided for rank and fashion, and for which Bath has been so long celebrated, would be to repeat a twice-told tale. The subscriptions to the assemblies, the bands, and other fashionable amusements are within the means of those who have but a very limited income. Thus I did not think a work upon the Bath Waters would be complete unless some allusions were made to the advantages presented to those who, being obliged to accompany invalids for protracted residence, require amusement and intellectual society for themselves, and the advantages of a good and cheap education for their children.

CHAPTER I.

Of the General Properties of the Bath Waters.

THE peculiar virtues of the Bath Thermal Waters in the treatment of numerous chronic disorders, have employed the pens of many distinguished Physicians, both local and metropolitan. Those mysterious hot springs which tempted the ancient Romans to make choice of the valley of the Avon for a sanatorium, and to confer upon them the designation of the "WATERS OF THE SUN," still preserve their uninterrupted flow, the volume and temperature scarcely ever altering. The various chemical analyses do not attempt to explain anything more than their solid and gaseous contents, the cause of their uninterrupted flow at a high temperature being still an object of scientific conjecture.

Thermal waters derive their temperature from the earth, and among them the Waters of this City have from prehistoric ages borne a high character for their influence on various disordered functions of the human frame, when other

medication has entirely failed. Experience has confirmed me in the belief, that much of their virtue is due to their natural warmth, so different from a mere artificial raising of the temperature. Thus they have never been successfully imitated in the laboratory.

This thermal heat enables the Bath Waters to be received into the stomach as a warm and grateful fluid. The capillary vessels of the digestive organs being stimulated, increased nervous energy and a greater volume of the arterial pulse result, the normal secretions are promoted, more particularly those of the skin, liver, and kidneys, and in cases requiring the continued exhibition of a chalybeate, we constantly see their use attended with more beneficial and less injurious effects than those which follow the administration of the officinal preparations of iron.

The Bath Waters contain various mineral ingredients, free carbonic acid, and a minute proportion of ferrous carbonate: in addition to which, Professor ROSCOE, of Manchester, has shewn by spectrum analysis that they contain *lithia*, so much extolled by DR. GARROD, in his valuable treatise on gout.

Their external administration in the form of baths and douches, in contradistinction to an ordinary application of hot water, is distinctly

bracing and tonic, (it never being in suitable cases relaxing) the more immediate beneficial effects are seen in the altered character of the perspiration, which, no longer debilitating, is attended by increased action of the heart and arteries, muscular power is strengthened, and there is more mental energy, the functions of the body are more regularly performed, and health re-established.

Many persons are of opinion that an ordinary warm bath produces equally beneficial results, but this is a speculation formed without experience; the effects of the *hot* water bath are relaxing and sedative, those of the *thermal* bath bracing and tonic; while the former produces symptoms of drowsiness, the latter is attended with exhilaration and increased energy, and a feeling of hunger is experienced.

In order that the Bath Waters may produce their remedial effects they require care in their administration; the general principles which should guide the practitioner to form a correct judgment are an absence of acute inflammation and febrile excitement. I shall in a succeeding chapter refer to those special circumstances which forbid their employment in cases otherwise suitable. Where care is observed in their administration, daily experience convinces me

that the distinguished authorities of the last and preceding century were correct when they stated that the Bath Waters possessed undoubted efficacy in the cure and relief of the disorders hereafter to be enumerated.

Analysis of the blood and the Bath Waters shows that many of their constituents are identical, and I am led to believe that this explains why these waters are so beneficial in disordered conditions of the circulating fluid. There is a great analogy between a vital and a thermal fluid; no natural fluid, not produced from the blood itself, so much resembles it as the Bath Waters; and I have always been of opinion that this will explain their beneficial effects in the restoration of debilitated constitutions where no active inflammation exists. Persons who have long been confined by protracted suffering from rheumatism or other chronic ailment to a room not exposed to fresh air or the direct influence of the sun's rays, become gradually enfeebled, their blood loses many of its normal elements, it becomes black and unoxygenated, and if, as I frequently saw during my residence at the Mineral Water Hospital, this fluid was changed into one of a florid and healthy hue, I am strengthened in my conclusion that the restoration to health was due to the free administration of the Bath Waters.

CHAPTER II.

Of the diseased conditions in which the Bath Waters are applicable, and the circumstances which forbid their employment.

DISORDERED conditions of the nervous functions, in which the cerebro-spinal system is not organically affected, present the most favourable results from the Bath thermal treatment; among them may be more especially noticed—*chorea*, *sciatica*, and *neuralgia*: to these may be added those paralytic affections attended by a gradually increasing loss of power over the nerves and muscles of the extremities, and caused for the most part by the absorption of lead and other minerals, as in the ordinary *dropped hands* of the painter; by long use of the pen, as in *Scrivener's palsy*, and by the constant exposure of the extremities to cold water, in various mechanical employments.

Diseases of the cuticular surface, unaccompanied by sores, in which the depraved secretion varies from a branny roughness to a constant succession of large scales, varying in quantity from a few grains in one case to several ounces in another :

disordered conditions which do not materially affect the general health, as *Lepra*, *Psoriasis*, *Eczema*, *Impetigo*, *Pitiriasis*, *Porrigo*, *Tinea Capitis*, and their various sub-divisions and complications.

Chlorosis and functional disorders of the uterine system ; *Anæmia*, caused by long protracted illness, in which convalescence is retarded ; and *general debility*, caused by diminished action of the circulation.

In *Chronic Gout* they have been found beneficial in almost every case in which their employment has been recommended. Their use lengthens the period of interval between the attacks, restores the disordered functions of the liver and kidneys, improves the secretions, promotes the appetite, and restores the health of the patient.

In *Chronic Rheumatism* a statistical or numerical statement would be valueless, because this disease comprehends a wide range of affections which involve more or less loss of power ; from the temporary heat and stiffness of one joint, to the almost complete loss of power over several ; so that we are forbidden to say more than that this disorder shows a greater number of cases relieved than any other, and a far larger proportion cured.

In *arthritic diseases* generally their use is beneficial : in the chronic debility left by fractures and

dislocations they restore strength to the affected limb. And in hip joint disease I have observed numerous instances of the great benefit that has attended their cautious employment; in the diminution of hectic fever, the increased motion obtained, and the gradual improvement of the general health.

The diseased conditions which I have now to specify are attended with less benefit than those above enumerated. Patients require constant supervision during the employment of the Bath Waters, and, except in carefully-selected cases, their use is not unaccompanied with danger. Thus *Hemiplegia* is in the majority of instances caused by an organic lesion of the brain, and is for the most part incurable under any mode of treatment; more particularly when followed by contraction, where the use of a stimulating remedy requires extreme caution, and where but partial improvement can be hoped for under any medication. Those cases of *Paraplegia* also, which depend upon chronic inflammation of, or injury to, the spinal cord or its membranes, present but faint encouragement to the thermal treatment.

As all the disorders likely to be benefited by the Bath Waters must be in the chronic stage, I shall now enumerate the various symptoms and

other circumstances which forbid their employment, in order that the medical attendant may judge whether the patient is likely to derive benefit from the use of the Bath Waters.

There are eight circumstances which especially render the use of the Bath Waters improper.

1st. *Epilepsy*.—In no case where well marked epileptic fits have occurred should they be employed, because their use will cause a return.

2nd. *Recent Apoplexy or Paralysis*.—Where proof of recent determination of blood to the brain exists, their employment is forbidden.

3rd. *Phthisis and Scrofula*.—They should not be used in these affections because their employment would produce active symptoms. It might be inferred that in Chronic Bronchitis they would be also contraindicated, but I constantly see many Asthmatics who use the waters with benefit, when due caution is observed in their administration.

4. *Disease of the heart*.—In cases of rheumatism, where the acute form of the disease has involved the heart or its investing membrane, and disturbed cardiac action accompanies the chronic stage, the use of the Bath Waters should under no circumstance be advised, and in cerebral palsies, where the circulation is affected, the use of the Bath Waters is contraindicated.

5. *Acute diseases* are not only not benefited, but increased in intensity by their employment.

6. *Chronic Abscess or Ulceration*.—This applies to diseases of the joints; which are not benefited if suppuration or ulceration exists, neither are skin diseases, if large abrasions or ulcerations constitute a prominent symptom.

7.—*Paralysis of the Sphincter Muscles*.—Where this is a constant symptom I never see the Bath Waters useful.

8. *Hæmorrhages*, whether active or passive, forbid the employment of the Bath Waters.

Attention to these disqualifying circumstances is absolutely necessary; a careful examination of the patient is essential in all cases where doubt exists, otherwise much mischief may be inadvertently produced to the sufferer, and much unmerited discredit brought upon the Bath thermal cure.

CHAPTER III.

Of the Diet and Regimen to be observed during a course of the Bath Waters.

EXPERIENCE in every age has shewn that the physician does but little, who, confining himself to the prescribing of medicines, neglects to attend to the various auxiliary means which aid him in the treatment of disease. In reference to our present enquiry, these comprise diet, clothing, air, exercise, and amusement.

The first requisite to the invalid in the employment of any remedy is confidence, imparted by the hope of receiving benefit; and, as a class of remedies, mineral waters demand this confidence more than any others: far better not to resort to them at all, than to do so without a reliance on their efficacy. Another essential is complete tranquillity of mind, and absence of all mental anxiety. The patient who goes to a Spa should leave all his troubles at home, or remain there until he can do so. It is presumed that he visits the springs to restore his impaired health, and this object should be his exclusive study during

his stay. Thus, then, confidence in the remedy, and tranquillity of mind are the first essentials to restoration to health.

Attention to diet is necessary in all states of disease likely to be benefited by the waters of Bath. For while so many diseases, relieved by them, owe their origin to irregularities of diet and indigestion—as gout, from luxurious living; rheumatism, in certain cases, from hard beer and cider; and many diseases of the skin, from the constant use of pork, salted meats, or other improper food—it is manifest that a strict rule in reference to this subject cannot be too forcibly impressed upon the invalid.

The patient should rise early, take moderate exercise before breakfast, and avoid taking this meal in his bedroom, or, if obliged to do so, should have his window open for a short time, to admit the fresh purifying air. It is a great mistake to suppose that the admission of fresh air is prejudicial to the invalid; it only is so when the patient is exposed to a thorough draught. It is the close bedroom air which produces so much mischief in that stage of rheumatism in which the acute disease is subsiding into the chronic, and which renders the patient, on first leaving his bed, liable to suffer from the slightest breath of air.

For breakfast and tea, he may take as much bread, not less than one day old, and butter, or toast, as he can manage, with not more than two cups of black tea, or coffee, and one egg: but no meat or fish of any description.

He should take a very moderate luncheon as of biscuit, if he should require it.

His dinner should consist of mutton, lamb, or beef, roast or boiled; boiled or roast fowl; he should eat sparingly of animal food, and carefully avoid highly-seasoned dishes, green vegetables, and fish; it is important that this meal be taken in the middle of the day, in order that digestion may be fairly completed before retiring to rest.

Stimulants are to be avoided, more particularly the stronger kinds of malt liquor; the best beverage, if the digestive system be impaired, either by the long continuance of the disease, or the previous administration of powerful medicines, is very weak Cognac brandy and water; but this should not be taken unless specially prescribed by his medical adviser.

The supper must be of the lightest description, consisting entirely of farinaceous materials, and should, in every case, be taken at least one hour and a half before retiring to rest.

The bed should be comfortably warm, and not too luxurious or enervating; for, if so, it is likely

to interfere with the salutary effect of the Bath water treatment, by causing too great a determination to the skin.

The clothing should be sufficiently thick to protect the patient from atmospheric changes, but not too warm. Thus, an underclothing of merino is often better than flannel; and good cotton stockings frequently better than worsted. All unnecessary wraps are to be thrown away; for, however useful they may have been when the disease first appeared, they now only render the parts to which they are applied more susceptible to cold and local inflammation; and the same remark applies to bandages of every description, which interfere with or restrict the free motion of the joints to which they are applied. Upon this subject I speak not from mere observation, but from personal experience; having twice had to resort to Bath for protracted courses of the waters, I am enabled to say, that I have enjoyed a greater freedom from rheumatic attacks, since I adopted this plan of clothing, than I ever did under the warmer treatment which was before thought necessary.

Fortunately for those who resort to Bath for their health, the houses on the Parades and streets adjacent were erected exclusively for the accommodation of the invalid. The pavement is on a level

with the street doors, so that, by means of the wheel-chairs—which take their name from this city—even the cripple may enjoy the fresh air without fatigue, and partake, in some degree, in the amusements, so necessary to his forlorn condition.

To all who can walk, I recommend free exercise in the open air. Bath is surrounded, at easy distances, by romantic walks and pleasing villages. With a view to interest the valetudinarian, I, while residing at the Bath Hospital, employed the leisure time spared me from more arduous labours, in the preparation of a volume, entitled, “RAMBLES ABOUT BATH AND ITS NEIGHBOURHOOD,” in order that he might know how to employ his time in healthful recreation. Such little excursions, chosen as they may be in Bath, even in the severest weather, so as to avoid the chilling breeze, will add variety to his amusements, and, by the occupation of his mind, forbid the contemplation of the supposed hopelessness of his case, and aid the efforts that may be made for the restoration of his health.

Bath, indeed, still preserves its Saxon reputation as the “City of the Sick Man.” Its Pump Room was erected that it might form a promenade in wet weather; and there is not a day, however cold, in which a warm and sheltered walk may not be chosen.

It must here be remarked that Bath is, from position, the warmest inland town in the empire during the winter season ; that its prevalent winds are westerly, so that those who come from a more bracing air, require out-of-door exercise, otherwise their health fails, and the full benefit expected from the waters is neutralized by the warmth of the atmosphere. But if the invalid will bear in mind that he comes to Bath, not to frequent its fashionable resorts, but for the benefit of his health, he will require no other inducement to take his out-of-town walk or drive.

When longer excursions are inadmissible, the Victoria Park will afford variety enough. It is situated to the westward, and is sheltered from the north and north-easterly winds, so prejudicial to the rheumatic invalid.

Above all things, let the invalid avoid any inducement to violate the rules laid down for his guidance in reference to diet; let him shun all temptations which will interfere with his main object, and steadily devote himself to an observance of the simple rules which are to guide him during his residence at the springs.

There is one point which, although incidentally noticed by writers upon this subject, has not received that attention which its importance demands, and that is, that these waters are one of

the best remedies that can be used to wean the habitual indulger in strong potations from his propensity to drink. The stomach, in these unhappy cases, experiences a craving, which is relieved by a glass of the Bath Waters; the dyspepsia is relieved, not at the expense of fresh fuel added to the already burning heat, but with a grateful fluid which moderates its rage. The glow of health is substituted for that of a feverish excitement; and a steady course of the waters will speedily cure the vicious propensity; in some instances, by producing a smart attack of gout, heretofore latent in the system; and, in others, by supplying energy to the injured organs, which enables them to resist and subdue the morbid propensity by the restoration of their healthy functions. I have had many instances under my notice in which these results have occurred: in this condition the healthy stimulus afforded by the waters is so grateful, that the patient, at last, prefers it to that which, a few weeks before, he thought essential to his very existence.

I have never seen any ill result, in those accustomed to *live well*, who have adopted the temperance system during their treatment by the Bath Waters; on the contrary, the very best results have marked all cases in which this plan has been adopted.

CHAPTER IV.

Of the Modes of Employing the Bath Waters.

TAKEN altogether, there are nowhere more systematic arrangements for the comfort of the invalid, than those which are presented by the suites of Baths and Pump Rooms in the immediate neighbourhood of the thermal springs; the property in which having been, since the charter of Queen Elizabeth, vested in the Mayor and Corporation, everything that science could suggest and suffering require, has been brought to bear upon their completion.

I need not enter into the enumeration of the number of gallons eliminated from the springs in a given time, or any of the details which find their proper places in the Guide books of the city;—I have alone to deal with the Bath Waters in their therapeutic or medicinal character.

To those who come to Bath for its amusements, the season commences in November, and terminates in April; but for those who resort hither

for the restoration of their health, various periods of the year seem to me to be appropriate for different disorders.

The winter is certainly best for those who drink the waters for the diseases induced by debility and exhaustion; and in all cases where a mild air is recommended for the invalid, this season is to be preferred, great care being taken to avoid all exposure to cold.

From the middle of February to the end of April, and from September to the end of November, are the best times for those afflicted with cerebral or spinal palsies. In these months the extremes of temperature are avoided, and exercise can be always indulged in, whether active or passive.

For the various diseases of the skin, the warmer months are the most suitable, because the general health not being materially affected, and the object to be gained being the restoration of the cuticular function, free exercise in the open air is the greatest adjuvant to the cure.

For the cure of metallic and local palsies, nervous diseases, and simple rheumatic affections—all periods of the year.

Gout and rheumatism vary so much, both in intensity and degree, that no general rules can be laid down.

A fair course of the Bath Waters is usually considered to be six weeks; but I have seen repeated instances where they have continued to produce benefit for four or five months. As a general rule, if they agree, a perceptible improvement is manifested after a very few days; and then, if the patient steadily improve for six weeks, it is better to suspend their use for a short period, and resort to them again for another period of six weeks, than to persist in a more extended course. It must always be borne in mind that our great object in the administration of those remedies which require time for their operation, is to assist nature in relieving the system of a disordered action, whether functional or organic; and experience shews that the beneficial effects of the Bath Waters are gradual and cumulative, requiring time for their production, and that the benefit derived is, in the majority of instances, not fully developed until two or three weeks have elapsed after their entire discontinuance. It frequently happens that much discredit is induced by persons who imagine that three or four baths ought to suffice for the cure of a disorder which has, perhaps, existed for months. While the poor patients in the hospital remain until they have undergone a full course, and return home, cured of their afflictions, many

persons in the upper ranks of life are dissatisfied if they are not enabled to leave Bath quite well the week after their arrival !

The administration of the Bath Waters is—externally, in the form of baths, dry and wet pumping, and—internally by drinking ; with modifications, which will be hereafter mentioned when I come to speak of the special diseases for the relief of which the various methods are either simultaneously used, or varied, the one for the other.

The usual period for drinking is between nine and eleven in the forenoon, and between three and four in the afternoon. It is advisable, in all cases where practicable, that the patient should take the waters at the Pump Room ; the quantity should not exceed four ounces for the first six doses, afterwards six ounces may be taken for eight doses, and then, if they are found to agree, the full quantity may be persevered in : which is from one pint, to one pint and a half per diem. Moderate exercise should be taken immediately after each dose of the waters, in order that their full beneficial effects may result.

Their peculiar action is soon perceptible, in the great exhilaration of the spirits, in the warm glow imparted to the skin ; by the feeling of hunger : and by an increased action of the liver and kidneys.

Bathing may be enjoyed either in the public baths, which are uninterruptedly supplied from the spring in the centre of the King's bath, or in the private baths attached thereto; or at the hot springs in Bath Street, and at the New Royal baths, adjoining the Grand Hotel.

In the private baths, the invalid will find every luxury that can be required. The attendants are accustomed to the care of the sick, and are most attentive.

With regard to the temperature of the baths, those who bathe in the King's bath are unrestricted—they bathe in the natural water as it rises from the earth.

The private baths are supplied with tanks, in which the thermal waters are allowed to cool, so that the heat may be regulated to the requirements of the individual case, each bath being entirely filled, and the temperature accurately made known by the thermometer, in the presence of the bather.

A hot THERMAL bath is of the degree marked by Fahrenheit's thermometer, 105 to 107. A warm bath, 98 to 102. A temperate bath, 95. A tepid bath, 86. Several large swimming baths of the latter degree are kept constantly filled in the neighbourhood of the hot springs.

The invalid should bathe on alternate days, not later than two hours after a meal, nor earlier

than one hour and a half, and should be provided with extra external covering, in order that he may not take cold on his return home.

He should leisurely undress, and proceed at once into the bath, in which he should remain for a period not exceeding twenty minutes, as a general rule: although some persons come out refreshed after a much longer period. He should move about in the bath, and give full play to his limbs, employing moderate friction by means of the flesh brush; and *under no circumstance* immerse his head, as this act from the great density of the waters, is not unattended with danger. The great proof of its agreeing with the system is the breaking out of a profuse perspiration on the brow; and in order that this may proceed without waste to the system, the attendant will supply him with a glass of the waters from the adjacent spring, which he will drink with relish, and which will add greatly to the efficacy of the bath.

Upon coming out, the attendant will place a hot napkin on his chest, and envelope him in a large hot linen sheet, with which he will carefully dry him. He should then wrap himself up in a blanket and lie down on the sofa in the dressing-room for a quarter of an hour, in order that he may freely perspire, and then slowly dress himself before the fire; and if circumstances permit,

he should proceed home in a wheel-chair, and not come into the external air for the remainder of the day.

I feel persuaded that a much greater amount of benefit is derived by poor patients in the Hospital by the enforcement of the rule that "no patient is allowed to go out after being in the bath," than one sees in similar cases out of the house, because in the latter, this rule is not considered a necessary aid to the curative effects of a remedy which acts directly upon the cuticular surface.

When a force of water is necessary to be applied to a particular part of the body, the douche, either in or out of the bath, is used.

Where bathing alone is employed, three baths a week will be found as much as the system can bear with advantage in any case. To this rule, from personal experience and close observation, I can form no exception whatever.

There are two kinds of douches, that used when the patient is in the bath is called the wet, in contradistinction to the dry, which is employed without immersion.

When the dry douche is used alternately with the bath, two baths and two douchings a week will answer every purpose required; the patient will be enabled to continue his thermal treatment for a longer period if he take the bath and douche

on succeeding days. If he allow two days for exercise, then takes a douche and the following day a bath, he will have the Sunday as the day of rest.

I must again repeat that the diseases remedied by the Bath Waters are all, more or less, of long duration; that this remedy exerts its peculiarly beneficial influence by its gradual action upon the corpuscles of the blood; and that no remedy with which we are acquainted requires us so constantly to bear in mind the old adage, "the more haste, the worse speed." A careful steady perseverance is of the first importance; the patient must be satisfied with gradual improvement, since every attempt to hasten this desirable object by too frequent bathing, not only retards the cure, but brings on symptoms of over excitement or plethora. When this happens, the physician is bound to regard the immediate constitutional symptoms, and to leave out of sight the special disease for which the waters were employed. I am confident that much undeserved discredit has accrued to the Bath water cure, from inattention to this fact; and I am the more particular in enforcing these general rules, because my own experience and observation convince me of their importance. Much mystery has been created by the inculcation of the notion that a course of

the Bath Waters requires that the system should be prepared for their employment: the only thing necessary in *all proper cases* is, that the bowels act regularly, because chalybeates have a tendency to produce costiveness. The patients at the Bath Hospital are submitted to no such preparation; an aperient is given, and they are sent to the bath, except in those comparatively few instances in which they enter the Institution unfit for the immediate commencement of the thermal treatment.

The whole suite of Baths and Pump-Rooms are now managed by a Committee of the Corporation of Bath, who have spared neither care nor expense in order that they might preserve their reputation for completeness of arrangement. And in order that the benefits of the waters might be enjoyed by those who from any circumstances are unable personally to visit the City, arrangements have quite recently been made for aërating and transmitting them, in bottles, to all parts of the world.

CHAPTER V.

Of the Use of the Bath Waters in Nervous Diseases which do not involve the Brain and Spinal Marrow in inflammatory action, either in their commencement or progress—Chorea, Lumbago, Sciatica, and certain forms of Neuralgia.

CHOREA.

THIS disease is well known under its common name of Saint Vitus's dance, and may be said to consist of irregular and purposeless contractions of the voluntary muscles suspended, except in extreme cases, during sleep. It occurs more frequently to females than males, usually between the ages of four and fourteen years—in other words, during the period of the second dentition—arising very much from the same causes as convulsions in infancy, namely, local irritation. It is not in general a disease of inflammation, but one which is peculiarly suited for the exhibition of mineral tonics. When tonics and purgatives (including among the former strychnia and phos-

phorus) have been tried for a few weeks without remedying the disease, and there is danger of its becoming permanent and affecting the mind, the Bath Waters rarely fail to effect a cure.

I am led particularly to notice the effect of dentition, from having seen adult patients, both male and female, who experienced distinct attacks of chorea while cutting each separate "wisdom tooth."

It is essential for the cure of this disease that the patients should be entirely separated from children of their own age, who have not the sense to know that they are objects of compassion and kindness, rather than of laughter and ridicule. This is a very important step in the treatment; all agitation of mind should be carefully avoided, and compulsory education suspended, otherwise the diseased action will become habitual, and the mind will be blunted.

The warm douche to the spine by means of a rose, is the best method of applying the waters externally, the force being regulated by the age and strength of the patient, who may drink a small glass of the waters twice daily. The cure occupies from six weeks to two months, according to the previous duration of the disease. Should plethora, inflammatory action, or determination of blood to the brain ensue, greater relief will be

experienced by the application of one or more leeches behind each ear than by any other form of depletion. After the occasional purgative which is almost invariably required, the motions should be carefully examined, in order to ascertain if there be any worms or other causes of intestinal irritation.

In this disease the Bath Waters are so useful in themselves that I shall not enlarge upon auxiliary remedies, merely mentioning one or two of the most useful.

The most valuable of these probably is—

Strychnia, given in gradually increasing doses, after the manner recommended by Dr. Hammond in his work on diseases of the nervous system.

Next perhaps in efficiency comes—*Sulphate of Zinc*, which, in doses of one grain twice a day, gradually increased to sixteen or twenty, given upon a full stomach in the form of pill, may be advantageously substituted for the internal use of the waters, a tepid thermal shower bath being used in place of the rose douche. This remedy does not produce either sickness or nausea; the appetite and strength improve; and the physical control of the muscles is seen daily to increase. When the full dose has been arrived at, it should be diminished in the same proportion, and not suddenly suspended.

LUMBAGO AND SCIATICA.

These diseases, as involving special nerves in a painful condition without inflammation of the nervous centres, may, for our present purpose, find a place here.

Both are attended with a degree of lameness; both have a tendency to become chronic; and, both are benefited by the same modes of treatment. They may occur as varieties of rheumatic inflammation, with some degree of febrile excitement; or in the form of pure neuralgic affections of the lumbar, and sacro-ischiatic nerves. Their diagnosis is exceedingly easy, and their treatment simple.

A free purgative at the outset is generally advisable, the particular purgative chosen being regulated by circumstances. Strict rest in bed should be enjoined, and in the case of lumbago, a succession of six large linseed meal poultices as hot as the patient can bear them applied at intervals of half-an-hour to the loins.

Perhaps no single remedy gives so much relief to sciatica as a long narrow strip of cantharides plaster applied along the course of the nerve so as to raise a blister. This or the rapid application of Corrigan's button, so as to excite a long tract of redness, will often remove the pain. If these fail, and only temporary relief should follow, the

hypodermic injection of morphia, and the employment of other recognised remedies, selected according to the special indications afforded by the case, such as quinine, turpentine, the application of the constant current, &c., combined with a careful regulation of the diet, the patient should be sent to Bath for thermal treatment. The advice which experience sanctions is to commence with the bath at the usual temperature three times a week ; and alternate it, as soon as the patient can bear the pressure of the column of water, with the wet douche and afterwards with the dry : drinking moderately of the waters for three weeks. Should no perceptible improvement take place in the special complaint, and the general health have derived advantage, some of the adjuvant remedies already alluded to and now more particularly to be detailed, must be adopted. These may be divided into external and internal.

The former comprise fomentations, blisters, sinapisms, and other forms of counter irritation, acupuncture, the hypodermic injection of morphia, galvanism, stimulant embrocations, and iodine.

Cupping to the extent of from four to eight ounces is not unfrequently attended with the greatest advantage, and the patient may resume his bathing on the day after the operation, with marked improvement.

Fomentations and sinapisms to the loins, where the pain is of a dull kind, are useful adjuvants.

Acupuncture with three needles in the course of the sciatic nerve, allowed to remain for an hour, has been attended with the best results in many cases in which I have seen it employed. It is a nearly painless operation easily performed. In some forms of the disease the relief is instantaneous, while others require it to be repeated two or three times before relief is experienced.

Galvanism, either in or out of the bath, has been very successfully employed.

A good stimulant embrocation for lumbago and sciatica is that composed of one drachm of the tincture of cantharides to one ounce of the compound camphor liniment. Another good external application is the saturated tincture of iodine and iodide of potassium, applied with a brush lightly over the course of the affected nerve. The patient being enabled to trace the pain from one end of the limb to the other, the attendant applies it, as it were, immediately to the painful part.

As to the frequency and extent of the last named application, much care will be required. If much local irritation be produced it will fail in its effects, and interfere with the due action of the thermal waters. Nor must the peculiar

physiological effects of iodine be overlooked, of which I shall speak when I come to consider its value as an internal remedy, taken in conjunction with the external employment of the waters.

The internal remedies which are most useful are quinine, iron, and iodide of potassium.

In these diseases there is often a marked accession of pain towards night, so that, in many respects, they bear a close resemblance to intermittent neuralgia, and in fact become so. In these cases, although bathing may be advantageously continued, the internal exhibition of the waters must be superseded by a moderate dose of the sulphate of quinine, or of this combined with iodide of potassium.* These paroxysms usually occur about six o'clock in the evening. Two grains of sulphate of quinine with from five to ten of iodide of potassium taken twice a day will, in the majority of cases, prevent the regularity of the exacerbation, and assist in the cure of the disease.

With regard to the various forms in which iron has been employed during a course of thermal chalybeate treatment, I have, by contrasting cases thus treated with those of a similar character in

* The real or supposed chemical incompatibility of the latter drug with the acid necessary for the solution of the quinine need not in the least interfere with their conjoint use.

which the Bath Waters only were employed, completely satisfied myself that they retard rather than increase the good effects of those waters, because they produce constipation, which symptom materially interferes with the success of the thermal treatment in cases where the chylopoietic viscera have been previously debilitated by the active remedies required in the more acute form of the disease.

Iodide of potassium is a remedy, with respect to whose virtues I cannot speak too highly, as I have seen markedly beneficial results produced by it, both constitutionally and locally, in this class of nervous affections. The blood being improved in its quality by the external use of the waters, this medicine assists the various glands to resume their natural function, and its use in this form of disease can only be explained by its general constitutional benefits.

I must confess that I have been surprised at the large doses of this remedy that have been taken by patients in other places with impunity and temporary beneficial effects, but I have frequently seen that the Bath Waters have produced a satisfactory result, after this remedy in large doses has failed to do so.

I am certain the temperament, climate, and local position, have their influence upon the action

of this and other powerful remedies, (although freely to discuss this subject, would occupy too much space in a work of this kind). I must be allowed to refer to experience, which has fully shewn that from two to five grains twice a day is the most beneficial dose of this remedy, when used as an adjuvant to the Bath Waters, though, as I have previously remarked, from five to ten grains, and even more, are required to produce a similar effect when the remedy is employed alone, or with quinine only.

The constitutional symptoms which indicate that the iodide should be discontinued are, general febrile excitement, irritation of the nasal and bronchial membrane, and congestion of the conjunctivæ. These effects cease by the operation of a saline purge, and the patient is instantly relieved. I remember once shewing a medical friend a case of this kind; he hastily said, "This is scarlet fever." "No," I replied, "it is iodism," and the patient was well on the morrow. These effects are peculiar to the damp days of winter, when two or three moderate doses are sufficient to develop them in a marked degree. I regard them, as we do mercurial ptyalism; as an indication that a sufficient quantity of the drug has been given. Colchicum in these diseases, except as an adjuvant to an occasional purgative, de-

presses the system too much to produce any beneficial result. Guaiacum exerts no beneficial effect; and though arsenic has been recommended, in my opinion the results obtained do not justify its use during a course of thermal treatment for the cure of neuralgic affections.

When these painful affections become chronic, the Bath Waters judiciously employed, possess great value in their treatment—remedies which have been previously useless seem to possess new powers when given in conjunction with them, and where they have been alone employed, their use has been attended with many surprising cures, and marked improvement in the general health.

NEURALGIA.

The effects of the Bath Waters in the ordinary *tic-doloureux* are, in the majority of cases, rather palliative than curative: they may, and frequently do, produce great relief; but where the disease has become habitual, this is but temporary, and the pain returns. In these cases, and especially, where there are three points of greatest intensity of pain corresponding with the centre of the brow, with a point vertically below this under the eye upon the cheek bone, and with a third point (still in a vertical line) situated just above the chin, we must look to the cause of the disease, and consider

it as one of that class which involves the nervous centres, and therefore beyond the reach of any mere palliative treatment.

But there are cases of severe nervous pains which have not a constitutional origin, and to which I would apply the term "simple neuralgia," which derive the greatest advantage from the Bath thermal treatment, provided this is had recourse to before the disease has become very chronic.

As a general rule, in all cases where the disease has returned, after a temporary benefit has been derived from the exhibition of the preparations of iron, the internal and external employment of the Bath Waters will be attended with beneficial results. There is a form of this disease—of which I can find no mention made in any of the systematic writers, which, without doubt, is cured by the Bath Waters, when all other means that science can invent have proved ineffectual. Upon this point I speak with perfect confidence, as my own case, now about to be briefly related, first drew my attention to the importance of a correct diagnosis of that form of the disease which I propose to designate *Mercurial neuralgia* of the joints.

In July, 1838, while walking in London, I was knocked down by a truck, falling heavily to the ground. I bruised my right knee joint, which

subsequently inflamed and involved the inguinal glands. I was at once ordered to bed; leeches and other antiphlogistic remedies were had recourse to; but still chronic tumefaction remained both in the joint and glands above, for the relief of which blue pill, and the application of mercurial ointment were prescribed. This treatment was continued for three weeks without any effect upon the gums, but with great relief to the parts affected, when, one afternoon, just as I had got out of bed, I fell fainting upon the floor. Reaction taking place, I experienced severe pain in the neighbourhood of the hip joint, with inability to use the slightest exertion without extreme agony. I became perfectly crippled upon the right limb, which wasted away until I could nearly grasp the right thigh with the right hand. Constitutional disturbance set in; I had night perspirations and all the symptoms of rapid decline, with the exception of cough. I consulted many eminent men without relief, until Sir Richard Dobson, of Greenwich Hospital, suggested the Bath Waters, and I came to Bath, more dead than alive, at the latter end of October. My friend, Dr. Garrett Dillon, suggested that I should see the late lamented Dr. Barlow, whom I so much honour both as a kind Mentor and as an instructor in the treatment of diseases by the Bath Waters,—whose

name I cannot mention without a sigh for his loss, —whose precepts have been my guide in many a season of difficulty and trial,—and whose practical knowledge and experience were always at my command.

Dr. Barlow put me upon a plan of treatment, ordered me to drink the waters, and to bathe thrice a week. In three weeks, I threw away my stick ; in six weeks I danced a quadrille ; and in two months I was so completely restored to health that my limb resumed its natural size, gradually regaining its former strength : and I have not experienced lameness, ache, nor pain in the limb since that period.

A gentleman consulted me in the year 1845, and gave me the following history of his case :— he had been previously treated for hip joint disease, which his complaint had been considered to be : his health was much impaired ; he could not put his foot to the ground from the severity of the pain ; the limb was wasted, and tender to the touch ; the joint itself, though painful under the finger, was equally so when pressed upon by the whole hand, and upon tracing the course of the crural and ischiatic nerves, great pain was produced. I then asked him if he had ever taken mercury, and he told me that which he thought of no consequence, viz., that, in the

convalescence of scarlatina, during the previous year, he had taken a few doses, and that the pain came on with great severity immediately after getting out of bed, and had never left him. I prescribed a generous diet, with tonics; and, as soon as he was able, a thermal bath, to be continued thrice a week. In six weeks he was able to walk without assistance; and in three months he resumed his professional avocations in the Metropolis, having entirely regained his health and strength.

I have seen cases in which this painful affection has attacked the shoulder joint, and one arm has become wasted and useless. A good diagnostic sign of the peculiarity of the disease is, that you can put the limb through all its natural motions, *if done gently*, without pain; whereas the patient himself is unable to perform one of them, also that pressure with the fingers and pressure with the whole hand produce a nearly equal amount of pain, the pain, in fact, occupying too large a surface to indicate disease of the joint which is implicated in the neuralgic affection; and it must be, moreover, borne in mind that it is a debilitating disease of the gravest character, and presents no features of inflammation or excitement, even in its severest forms; and it is of essential importance that we rightly diagnosticate between pain

of a nervous character, and that produced by inflammatory action, otherwise our practice will be inoperative.

It is not improbable that many ladies suffer from neuralgia caused by wearing the modern fashionable bonnets in the morning, which, being laid aside in the after part of the day, causes pain in the head and face, upon the least exposure to a current of cold air. The reasons are obvious : the bonnet is but a partial covering of a part of the system very susceptible to the influence of atmospheric changes, and which is the ordinary seat of simple neuralgia. The head-dress being thrown aside, the portion previously covered is attacked with pains which speedily become habitual and very difficult to cure, because the cause of the affection is unsuspected, and therefore unremoved. I mention this subject because it is exceedingly difficult, in nervous affections, to arrive at their proximate causes, without which, no good can result from any plan of treatment.

The remarks made in reference to the thermal treatment of lumbago and sciatica are equally applicable here, bearing in mind that patients have previously given a fair trial to the officinal remedies, and that the less we interfere with the waters, by the exhibition of other remedial agents,

the more likely they are to prove effectual in these diseased conditions.

Should acidity of the stomach exist, I have found much good derived from a combination of the alkaline carbonates, given in small doses at breakfast time, or from an aromatic cordial mixture. Should the drinking of the waters appear to disagree, an aromatic bitter may be substituted and the bathing continued.

CHAPTER VI.

Local and Mineral Palsies.

PALSIES, in which the sensorium is not affected, which come on gradually without any constitutional disturbance, and which, commencing in the feet or hands, gradually involve one set of muscles after another without impairing sensation, are the next class of diseases which require our attention. They are, immediately that the cause of the disease is manifest, more under the control of the Bath Waters than any other form of paralytic affection, and are known in the Mineral Water Hospital under the appellation of “Dropped Hands and Feet.”

Where dropped hands occur in painters, and other workers in lead, copper, and various minerals, it is usually preceded by attacks of colic, and the diagnosis is easily arrived at. These artificers resort to Bath upon the first appearance of the “dropping,” and receive a cure, which, although it may not be perceptible immediately on their return home, is perfected by a fortnight’s change

of air, and is permanent until the metal again exerts its influence.

The same remark holds good in those cases which are known to arise from the improper manufacture of cider in leaden vessels, which cases, as the danger becomes more and more known, are decreasing annually, so that this disease, once so common, is now comparatively rare in the cider districts.

But where no apparent nor appreciable cause exists of a mineral nature, the fact that this disorder is of an entirely local character may be overlooked even by the most skilful. The disease being referred to the brain, the patient may be treated antiphlogistically, and the palsy be increased, owing to the weakening of the general nervous system, and impairment of the health and strength; so that many of these cases, which, had they been sent to Bath in the first instance, would undoubtedly have been cured, do not derive any benefit from the use of the waters on account of the severity of the remedies which have been employed to relieve a supposed diseased condition which did not exist.

Colic, or spasmodic constipation, is the first observable effect of minerals when they produce mischief of a chronic character. Where this has not occurred, it will be found that obstinate con-

stipation, without spasm, has preceded the paralytic affection; and in all these cases, a peculiar blue or leaden coloured line will be observed on the patient's gums. In some cases, the quantity of mineral substance introduced daily into the system is so small, that no one (unless well acquainted with the disease, and aware of the extraordinary idiosyncrasy of some persons to the action even of a newly-painted article of furniture) could conceive what very slight causes will produce the painters' palsy.

Where this loss of power attacks persons in the higher and middle walks of life, the cause will frequently be found to exist in the daily use of water conveyed for domestic purposes in leaden pipes to leaden cisterns. Here the water, combining with the air, acts upon the lead, and a minute portion of the oxide of that metal is conveyed into the system with each meal. At other times the habitual employment of a hair dye containing lead will be followed by symptoms of incipient palsy in the extremities of the fingers.

I have had frequent opportunities of observing this disease in tailors, clerks, and workmen whose avocations were of a sedentary character, persons not supposed to be exposed in any way to the action of lead, but who had drunk malt liquor while at work, brought in a pewter pot; which by

standing a certain time, perhaps put on the hob to warm, caused the acid of the liquor to form a salt of lead from the pewter, which, entering the system of one more susceptible than another to metallic influence, had produced lead colic and palsy of the hands.

I have seen a very severe case of this disease occur in a man who sold white lead in a country shop. I have seen potboys suffer from it from cleaning pewter pots. It is a common disease with reporters for the press. I knew a gentleman who merely took slight refreshment in the newly-painted coffee room of a hotel, in which he remained but a few minutes, suffer severely; and Dr. Elliotson, in his lectures, relates a case in which a newly-painted cot, placed in the bedroom of a gentleman, produced violent painter's colic.

Gardeners suffer from it from entering newly-painted hot-houses; and it is not uncommon to see it among country carpenters, who occasionally do rough painting work.

Attention has been quite recently directed to the large amount of lead contained in the so-called American cloth, and the injury sometimes caused to health in consequence. In 10 grammes of a specimen of this cloth bought in a shop in Berlin analysis detected no less than 4·27 grammes of metallic lead.*

* Vide Med. Times & Gazette, Nov. 9th, 1878.

There can be no doubt that the impregnation of the atmosphere with the fumes of turpentine carrying minute portions of lead into the lungs of a susceptible individual, will produce colic and mineral palsy: the first, perhaps, only as mere constipation, the second, as dropped wrists and fingers, occurring nearly simultaneously in both upper extremities—a good diagnostic mark that the brain is not involved in the disease.

I was much struck by observing the effects of different minerals in two cases which came under my observation, in both of which no colic could be traced—the one a compositor, the other a bell-hanger, in which cases the thumb and forefinger only of the right hand were affected, and both were completely cured by the Bath thermal treatment without any adjuvant remedies. In these cases, the metal was applied directly to the extremities of the thumb and finger affected.

It is said that Oppolzer owes much of his early distinction to a recognition of the cause of a commencing palsy of the muscles of the right thumb in a highly distinguished General Officer in the Austrian service. He found it to arise from the daily employment in walking of a silver-headed cane, the upper end of which bore directly on the muscles affected. The silver, supposed to be pure, was found on examination

to be alloyed with lead; and the discontinuance of the use of the cane was followed by complete recovery.

Having thus reviewed this affection in relation to mineral poisons, we have now to consider the subject in reference to more remote causes.

I once saw a very distressing case in a young married woman, in which it was produced by her sick child having slept upon her hand and forearm during a severe illness which lasted several days.

A gentleman of eminence, as a metropolitan professor of music, was advised to ask my opinion, in the year 1846, as to the efficacy of the Bath Waters, he having entirely lost the use of both arms. He had been in the habit, for several hours daily, for many years, of giving lessons on the piano-forte, and in addition, was organist at a church. Two years before his visit to Bath, he had experienced a loss of power in the fingers, which being supposed to be the result of cerebral mischief, he was put upon very active depletory treatment without relief, in fact, with a gradually increasing loss of nervous energy, so that when he arrived in Bath, the hands hung loosely by his side, without the power to move a single finger; there was wasting of every muscle from thumb to shoulder, although feeling was as perfect as it

would be in a natural condition, and his general health unimpaired. Finding that he had a seton in his neck, I directed it to be removed. I changed his low into full diet, and advised him to drink the Waters, and to be galvanized in a thermal bath three times a week for a period of twenty minutes, at the same time telling him that the case was, I feared, a hopeless one, from the extreme loss of power and great nervous and muscular debility of the upper extremities. He persevered for a period of three months; his general health became robust, his appetite completely restored, and a considerable portion of muscular power in the arms was regained. His palsy arose from the frequently long continued pressure of the extremities of the fingers upon the keys of the instrument, and affords us a physiological fact that muscular energy depends upon the integrity of the motor nerves.

A clerk to a solicitor, who, during the railway excitement, had to copy a multitude of writings, was afflicted with palsy of the thumb and fingers. He received a cure from the use of the thermal treatment, and may be cited to prove that local palsy may be the result of mechanical pressure to the extremities of the nerves.

Modellers of cornices in wet plaster,—those who level stone by the application of sand and

cold water,—quarrymen who have to prepare wet slabs of freestone,—those who receive the damp sheets of paper from the printing press for folding,—are all liable to this species of palsy; and I have seen cases in which it could only be referred to one or other of these causes, so that I feel called upon to say that, where the palsy commences with both hands, we are bound to regard it either as the effect of a mineral absorbed into the system, or directly applied to the parts affected,—as a result of mechanical pressure, or of the continued application of cold to the extremities of the nerves supplying the parts implicated in the paralytic condition: in other words, that it is the effect of a cause which requires the medical practitioner to enquire into the avocation or amusement of the patient who places himself under his professional care, in all cases where loss of power over a set of muscles occurs without direct evidence of cerebral disturbance.

I have now briefly to discuss the causes of palsy of the lower limbs, commencing with the feet.

As dropped hands have been erroneously referred to the brain, so dropped feet have been treated as affections of the spine. Where one foot only is affected, the diagnosis may be difficult; but the previous history of the patient must be learned; the peculiarity of the motion observed;

the state of the digestive organs, in reference to constipation, accurately enquired into ; before we can arrive at a satisfactory plan of treatment. The causes of this affection are in the majority of instances, the same as those mentioned above in reference to dropped hands. It may occur simultaneously with them, or the lower limbs may be alone affected. Young subjects are liable to it during and subsequent to convalescence from fever ; those who work in water, and, again, those who get wet during their work, and, removing their shoes, remain in their stockings for several hours. In a few words, it generally arises from the continued numbness of the nerves of the extremities of the limbs, produced by the direct application of cold and moisture, or as the result of the constitutional absorption of mineral materials.

The late Sir Charles Hastings relates a very interesting and important case, where it succeeded a course of arsenic judiciously administered in the Worcester Infirmary for the cure of a leprous affection. This case is reported in the *Provincial Medical Journal* for 1848, and, being read at the meeting of the Provincial Medical and Surgical Association, held in Bath in that year, I was enabled to make some practical remarks upon the subject, founded on experience in similar cases.

The difficulty of diagnosis in dropped feet, not arising from minerals, is materially increased by the fact that it is a disease of great rarity in comparison with dropped hands; that its causes are somewhat obscure; and, moreover, that these causes more commonly produce other affections, as catarrh, rheumatism, lumbago, and sciatica; and that when they produce this peculiar paralytic affection, they do so by very slow degrees, involving one portion of the extremity after another in an almost imperceptible progress upwards.

I saw one of the worst cases of metallic palsy, affecting both upper and lower extremities, and produced by the slow absorption of lead into the system, in the autumn of 1849.

Mr. T—, aged about 40, from the west of England, had gradually lost all power over his upper and lower extremities, so that when he arrived in Bath, he could not move without the assistance of another person. He was unable to support himself upon his feet, and the whole muscular system was impoverished and had a peculiar flabby feel: sensation, and intelligence remained perfect, the appetite was good, the pulse regular, the secretions natural, the gums presented *the peculiar blue line*, and the face was dusky, and, as it were, leaden. His previous treatment had been depletory and antiphlogistic;

and he had been subjected to the constitutional effects of mercury without relief. It was agreed that he should be put upon a generous but unstimulating diet, and that he should freely use the Bath Waters in conjunction with galvanism, which was applied for a considerable period daily by the late Mr. Tylee, with great advantage. His muscular power, weight, strength, and appetite, rapidly improved, and at the end of six weeks, he could walk several yards without assistance,—could feed himself, take a pinch of snuff, and write a short note; when, business calling him away, he was obliged to go home, promising to return again, which he did with increased advantage.

I have dwelt, perhaps, longer upon this subject than the nature of my present design apparently justified; but from the mistakes in diagnosis which I have repeatedly seen, in these sometimes mysterious affections, I feel that my extended experience would be valueless did I not draw largely upon it, in treating of these really local, though apparently constitutional, diseases.

In these diseased conditions of the nerves, the Bath Waters seem to possess a specific action. They expose the whole surface of the body to the direct action of the tonic properties of iron, and, administered internally, the system, as it were, is

saturated with the antidote to mineral poisons. By increasing the volume and power of the pulse, diminished nervous energy is changed into excited power; the constitution, previously reduced by the long impregnation of the tissues with a deleterious and subtle poisonous principle, is restored to vigour; and the cure may be observed to progress daily. Such, indeed, is no exaggerated sketch of the effects of the Bath Waters in mineral palsies; and I have never observed them produce any ill effects where they have been judiciously persevered in even for a longer than the ordinary period, in those cases in which no constitutional predisposition to disease existed.

In the more obscure cases, their results are equally beneficial. When early submitted to their effects, it is manifest that, when the constitution has been subjected to violent remedies, and the nerves have remained, as it were, useless for a long period, the cure will be protracted, and the benefits derivable from the thermal treatment somewhat doubtful. Nevertheless, although the special complaints may but slowly improve, so long as the system gains rather than loses by the employment of the Waters, their use is to be persevered in.

The Bath Waters, when suitable to the case, are so very useful, that the Bath practitioner has

little else to do than to carefully watch their effects.

The internal adjuvants will not detain us long. First, the preparations of iron, more particularly the so-called sesqui-carbonate, have been largely prescribed. The great inconvenience of this remedy is, that it re-induces the constipation; whereas, during a course of the waters, in this and other diseases benefited by them, the bowels should act once every day as a general rule. I have seen strychnine largely employed both internally and externally, without any benefit whatever in any single case.

Should the relaxing atmosphere of the city produce temporary headache and mucous irritation, a mixture composed of the infusion of chiretta with sal-volatile, will be found to produce marked effects, in enabling the constitution to bear up against them, both in these and the other affections which are curable by the thermal treatment.

The external adjuvants are galvanism, both in and out of the bath, stimulating embrocations, and blisters.

The daily use, continued for half-an-hour, of the electro-magnetic or galvanic battery will be found of essential service, by exciting nervous irritability and inducing contractions of the palsied muscles.

Rubbing the affected limbs with a stimulating embrocation, twice daily, will be found a useful adjuvant, if used with the free motion of the affected limbs by the attendant. Passive motion should be frequently employed that the integrity of the joints may be preserved.

Blisters to the alternate limbs are useful. During their healing the extremity should be supported upon Dr. Pemberton's splint, called in the Bath Mineral Water Hospital, "the hand-board."

The following will be the plan which the medical attendant should pursue. He will direct a mild aperient vegetable pill, to be taken every alternate night until the functions of the bowels are completely restored; the use of a stimulating embrocation, passive motion, and galvanism, with the bath and douche, each twice a week, and the internal exhibition of the waters in gradually increased quantities for a fortnight. He will then intermit their use, in order, if necessary, to apply a blister. This should be large enough to cover the lower portion of the dorsal aspect of the fore arm, the wrist, and fingers, to the second series of phalanges, and may without constitutional disturbance, be from seven to ten inches long, by from two to four inches broad. The blistered extremity should be carefully supported on a splint; and

should the inflammation run high, the best application will be a bread poultice for a day or two. As soon as the blister is quite healed, the baths may be again resumed for a fortnight, with more advantage than before ; then the other extremity may be subjected to a similar treatment ; but I have often seen good results follow the application of one blister only, by the intimate sympathy which exists between the nerves supplying both extremities.

In mineral and local palsies of the upper extremities, as soon as the patient can grasp a weight, the dumb bell will assist him ; or, by means of a pulley, he may be encouraged to develop his muscular energy by lifting a weight gradually increased. In those cases where the lower extremities are affected, the use of crutches is much to be deprecated ; but little improvement will result where there employment is continued. The patient must begin gradually to depend on his own limbs for support. First, he must be made to bear the weight of his body upon his feet ; then to make an exertion to step ; or sitting down, move the lower extremities until he feels tired ; or recline upon a sofa, and for several hours daily persist in moving his limbs, until he acquires confidence to move them when in the erect position with the assistance of two sticks.

These directions may appear too minute as regards minor details, but in cases where our object is to develop muscular power, every means which experience sanctions must be adopted. These cases are invariably chronic, and their progress to recovery slow; our object should be so to direct the energies of the patient that every action may produce benefit; his mind should be diverted from the contemplation of his helpless condition by directing it to perform some portion of the necessary work of improvement, and thus his cure will be steady and progressive, gratifying alike to the patient and his physician.

The ordinary time required for the cure of these diseases is from eight to twelve weeks; and where manifest improvement has taken place without a perfect cure, the patient is not conscious of all the relief obtained from a visit to Bath until he has been away three weeks or a month, and if this improvement should be well marked, he may, after the lapse of six months, return again to the thermal treatment with every prospect of a complete cure.

As soon as the slightest voluntary motion is perceptible (even although it be but the mere movement of a finger), the patient should be directed to persevere until fatigued, in directing his thoughts to the moving of that particular

member. By bringing the brain to bear upon it, every movement will be supplied with fresh nervous energy, which will go on steadily increasing: and although the progress may not be perceptible from day to day, comparisons in these affections must be made from week to week. If he be stronger than he was the previous week, his cure is progressing favourably; the improvement caused by a remedy, acting, as it were, stealthily upon the system in general, for the relief of a local affection must be gradual, and every attempt to increase it, that is not founded on pathological principles, will tend to retard, rather than benefit the patient. Let him remember that he requires medical superintendence, and not doctoring; and that his cure is to be attained only by perseverance, and the steady accumulation of progressive improvement.

CHAPTER VII.

Chronic Diseases of the Skin.

IN our observations upon the use of the Bath Thermal Waters in these complaints, we are struck with their manifest advantages in those cases which, by the unlearned, are called "scorbutic eruptions." These, without producing loss of general health in any way, seem to be caused by some general irregularity of the secreting functions of the skin—acting locally upon particular portions of the external surface.

In these diseases, the waters possess the virtue of accommodating themselves to every variety of practice. Frequently in the simpler forms of the squamous or scaly diseases, they cure without any other remedies. They are efficacious in combination with internal tonics and external stimulating applications, and they also produce decided advantage when employed in conjunction with antiphlogistic remedies in many forms of disease, particularly general eczema and some of the varieties of inflammatory psoriasis.

It is not my intention, in the present work, to enter upon the distinctions which pathologists have drawn between the various forms of scaly cutaneous eruptions, since many of them are but varieties of the same diseased action. They may co-exist, and in many cases do so. I shall never forget the remarks which M. Alibert made on this subject, during his course of clinical lectures at the Hôpital de Saint Louis; and experience convinces me that these distinctions are of no practical avail to the practitioner of medicine, except, perhaps, in the acute stage.

Occasionally, among the patients resorting to Bath, we see many varieties co-existing. I remember an inveterate case in which four of them were present: *lepra vulgaris* occupied the knees and elbows; *psoriasis* had taken possession of the arms and legs; *pityriasis* covered the face and neck; and *porrigo* the head. Each in its commencement had presented its nosological definition: all arose from the same cause, modified by long continuance of diseased action, and by those particular portions of the body which are most commonly selected by each. Although in their more acute stages, they presented distinct nosological appearances, when the case came to Bath, these were obliterated, and the thermal treatment alone cured the patient.

I saw a remarkable case during my residence at the Bath Mineral Water Hospital, of a female covered from head to foot with psoriasis, in which the body daily discharged an enormous heap of scales, bearing a proportionate weight to the quantity of the cutaneous exhalation of a healthy person. This case was entirely cured by the application of Barbadoes naptha, by means of a painter's brush, (which prevented the formation of the scales), and a concurrent three months' course of the Bath Waters: when, singular to relate, scabies, in an inveterate form, which had existed prior to the appearance of the psoriasis, made its appearance, and more than one of those who had constantly waited upon the patient during the cure of the squamous disease, became infected with the pustular, although they were previously unaware of its existence.

To what, then, are we to attribute these varieties of disease? They are modifications of cutaneous disorder produced by habit, temperament, and peculiar constitution; in some cases errors of diet will produce herpes, in others impetigo and the various forms of eczema. The direct application of cold will produce psoriasis in its various modifications in some individuals, and the modification known as lepra in others; and we often see congenital skin diseases, which assume the form

of pityriasis, running in patches into eczema and ichthyosis.

The causes which frequently precede and in some cases no doubt cause these various diseases may be stated to be, a want of cleanliness, errors of diet, the direct application of cold air to particular portions of the body, various trades, and hereditary predisposition.

In regard to the latter, our endeavours to arrive at a hidden cause for an uncommon affection have much misled us in our investigations. I am inclined to believe that the predisposition to particular forms of cutaneous disease may be hereditary, without the disease itself being so, even though the same causes are applied to parent and offspring. I have had patients under my charge who had large families, and in no one instance have I been enabled to elicit that either their parents or children were similarly affected. It must be admitted, however, that these diseases are more common than is generally believed; and when, in their milder forms, they do not interfere either with the health or comfort of the individual, they cease to be an object of solicitude, and are frequently unknown to any one but the sufferer himself.

The direct application of cold air—in other words, suppressed perspiration—is probably a

not uncommon cause of lepra and its allied diseases. In these cases the cuticle becomes altered in character, and assumes a diseased function. The exhalations are first suppressed altogether, and then the follicles become enlarged one after another, and the leprous patch is the result; enlarging from within outwards, the cure, commencing with those follicles which were the first to take on the diseased action, proceeds also from within outwards, and is completed by the gradual return to a healthy state of each individual cell. These, in their diseased state, secrete a matter which solidifies upon its reaching the surface, and constitutes the varieties of lepra and some forms of psoriasis; and the cure does not commence until moisture exudes from some portion of the squamous patches, in other words, until the cataneous function is restored.

The same remarks will apply to that peculiar affection of the fingers, in which the disease, perhaps affecting one or more, and confining its exacerbations to them alone, changes its character daily, sometimes vesicular, sometimes pustular, sometimes squamous, but always attended with distressing feelings of burning—a disease which, let it be as inveterate as it will, is like all the squamous diseases, incommunicable by contact even to an abraded surface, a fact which I have

proved by actual experiment. This, which is a variety of psoriasis palmarum, is relieved by the application of leeches, and cured thereby in conjunction with the Bath Waters.

If we take lepra and its varieties, in conjunction with psoriasis forming its peculiar snakelike incrustations, as one and the same disease; modified in particular constitutions—and in many of the sufferers you are enabled to shew distinct portions which answer to both definitions—we are naturally anxious to enquire into their causes, and upon this head many theories have been advanced; by some they have been considered as diseased alterations of the cutis, by others as an extreme development of the cuticular cells. No doubt, under the microscope, the cells of the cuticle have been observed to be changed in their character; but I have made repeated observations upon patients who have just left the bath, and wherever I have observed moisture and a freedom from solid deposition immediately after leaving the waters, I have invariably found improvement in the eruption—in the circular spots of lepra a disposition to form healthy skin in the centre; and in the serpentine forms of psoriasis, a breaking up of the line of disease. The result of these observations has been to convince me that these diseases are to be considered as an abnormal condition of

the cuticular function, in which, the follicle being inflamed, the perspiratory matter becomes solid; and that their cure depends upon the restoration of the perspiration, sensible and insensible, to its normal condition.

Among the diseases of the skin (which in many instances arise from some accidental or long-continued errors in diet) herpes and eczema may be cited as instances. In these cases a well regulated course of the Bath Waters, with strict attention to diet, and various adjuvant means, hereafter to be mentioned, rarely fails to cure.

Leptous diseases and pityriasis, are frequently caused by a neglect of personal cleanliness, the latter disease more particularly so. When it affects the head, it is, in a great degree, to be attributed to the constant irritation produced by the use of the small-toothed comb, which, irritating the tender scalp, excites the exhalent vessels to pour forth a diseased secretion, which, in the first instance, presents the form of pityriasis, then as the result of the irritation due to scratching, eczema not unfrequently, and sometimes also porrigo becomes associated with it—a disease frequently resisting all ordinary methods of cure, but which, in almost every instance, rapidly succumbs to the influence of the thermal treatment.

The imprudent drinking of cold water, when heated, is a frequent cause of cutaneous disease. Here the system, receiving a shock, throws the diseased action to the surface, to avoid more fatal consequences, and, once established, the diseased cutaneous action becomes habitual. Hence the necessity of caution in our attempts to cure them: suddenly suppressed, they may sometimes cause the diseased condition to attack the internal organs. In these cases the Bath Waters are admirable adjuvants; they assist other remedies by their influence upon the circulating fluid itself; slowly progressing in their effects, they act as constitutional alteratives, and convert diseased into healthy action. Thus invigorating the whole body, they restore the healthy action of the skin.

In the peculiar forms of squamous disease which affect particular callings, and which sometimes assume the character of the other genera, grocer's itch and the soda eruptions of the laundress may be mentioned. In these cases the Bath Waters, either alone or in combination with local depletion, are eminently successful, by restoring healthy perspiration to the parts affected.

The common scald head of the child, which sometimes assumes a variety of features, and changes its distinctive character almost daily, is but one of the forms of squamous disease. It

frequently accompanies lepra, which, in the majority of cases that become chronic, is to be found on the head also. The most common cause will be found to be imperfect second dentition: it might probably be regarded as an effort of nature to free the system from the effects of local irritation; the majority of children suffering from which are attacked with eruptions of the scalp—the minority with chorea. I have seen many cases of this compound eruption, in which free scarification of the gums and the use of the Bath Waters have not only entirely cured the eruptions, but have enabled the system to contend against the disposition to unhealthy exhalations from the skin. Once affected with cutaneous disease of a squamous character, the system remains ever after liable to its return: indeed, many patients resort over and over again to Bath for “cleansing,” in consequence of the return of their eruptions.

Perhaps the most singular feature in these cases is the perfect health which the patients enjoy during their continuance. This is very remarkable. They seem to possess a perfect immunity from vital or structural disease; and in conjunction with this fact, it is well to remember that some of the remedies employed for their cure have a tendency to render the

constitution less vigorous. Although, therefore, these remedies may be in some cases, specifics; what is the result? Patients are cured of their local disease at the expense sometimes of their general health. At these springs, however, the remedy is of a mild and health-imparting quality: the bath soothes the already inflamed papillæ of the skin, and removes the irritating scales; by improving the character of the discerning vessels, it enables them to pour forth a bland, and not an acrid fluid, which subsequently undergoes curcretion into a scale or scab. It restores the functions of the skin to their normal action; and where it fails to cure, it invariably relieves. Then a knowledge of the adjuvants is necessary, there being scarcely one of the ordinary remedies which does not acquire additional powers when used with discretion in combination with the Bath Thermal Waters.

I shall now briefly state my experience of the use of these remedies in conjunction with the Bath Waters.

LEPRA AND PSORIASIS.

These, which are by far the most numerous cutaneous diseases sent to Bath, may be advantageously treated of together, as they are probably but particular manifestations of a single patho-

logical state. They frequently run their course in the same individual, and seem (if I may be allowed the use of the expression) to select each its particular portion of the body, and both illustrate, in almost every case, the symmetry of disease. The knees and elbows are the chosen seat of *lepra vulgaris*; the shins, of *psoriasis*; while the head invariably implicated more or less in the eruption, may present other forms of concurrent squamous disease. Happily, the general health of the patient is very good in almost every ordinary case, and the cure progresses slowly but satisfactorily throughout.

I have seen many cases in which the Bath Waters alone have entirely cured these varieties; true *lepra* and *psoriasis*, with the eruption of the head, running their course together. For this combination of diseased conditions, I feel almost disposed to invent the name "*lepriasis*," to express ideas which are otherwise difficult to convey. It may be sufficient to observe that I have repeatedly seen cases in which almost every diagnostic mark of *lepra* and *psoriasis* have been observed, and not only so, but of many of their varieties also, while in many of them, diseases of the scalp were present, which partook of characters distinct from each: eruptions belonging to the same class of diseases co-exist; each seems to

possess its peculiar locality; the same causes developing different genera of cutaneous disease, in different parts of the body of the same individual.

When such cases present themselves to our notice, our examination proceeds as follows:—First, the head; then the mouth, a point which has been much overlooked, for in children more especially, the scalp disorder (no matter what its nosological variety may be) will, in the majority of instances, be found to depend, in a great degree, upon imperfect, delayed, or irregular dentition; and then the body. In order that we may see the extent of disease, a superficial view is not enough; a few spots may be shewn upon the extremities which may mislead us in our prognosis: I am never satisfied unless I examine cases of chronic cutaneous disease in bed.

Having satisfied ourselves of the nature of the eruption, and, as far as possible, ascertained the previous history of the patient, his habits, and the treatment of the case, we enquire into the state of the general health and character of the secretions. Dyspepsia, with the uric acid diathesis, will almost invariably be found as a prominent constitutional symptom. This point must not be overlooked; if it alone be present, we may safely conclude that it is but functional: and, having regulated the diet of the patient, we

direct him to use the thermal treatment. It is of great importance that this should be conducted upon the plans laid down in Chapter IV.; and he should endeavour to encourage the action of the skin by moderate exercise, and after his bath avoid all external exposure to the cold air.

It is necessary to regard these forms of eruption as a local manifestation of constitutional disturbance: they are to be treated as systemic diseases, and not as mere diseases of the skin. Every organ of the body must in turn undergo a searching enquiry, ere we can arrive at a satisfactory mode of treatment. The diet, habits, and occupations of the patient must be carefully regulated, and we ought to have a reason for the employment of every adjuvant remedy; in fact the beneficial effects of the Bath Waters can only be explained by their constitutional effect upon the system.

It is wonderful how long an advantageous course of the waters may be borne without inconvenience. I have known them, in severe and long-standing cases, continued for half, and even three-quarters of a year, with improvement resulting in cure; the affected parts gradually resuming a healthy state.

In all cases in which the scalp participates, the head must be shaved twice a week, and

washed twice daily with the petroleum or thymol or some similar soap. If the disease is inveterate, this may be applied by means of a shaving-brush, and, as an article of the toilet, the patient must use it during his cure. I have seen decided advantage result from the use of such soaps in many cases of chronic cutaneous disease. The petroleum soap is a mechanical union of the Barbadoes tar with soap; the latter washes off, while the former affords a balmy oleaginous covering to the skin.

The head speedily improves, and in six weeks is perfectly cured. All decayed portions of primary teeth must, however, be removed, and the second dentition carefully regulated. Without this, all applications are useless; the disease constantly recurs if the mouth be allowed to remain in an unhealthy condition.

In cutaneous diseases, the Bath Waters act by their gradual effect upon the circulating fluid, by their preventing the disposition of the skin to secrete an abnormal matter; and by their direct effect upon the capillary system, they induce an improved digestion and secretion.

Numerous instances have from time immemorial occurred, in which these waters have produced a cure when medical skill of the highest order has failed to do so. Of this, the records

of the Mineral Water Hospital afford abundant proof.

We will now consider the numerous adjuvant remedies, but they need not detain us long.

The first and most important is to regulate the digestive functions by means of a mild vegetable aperient pill, and the exhibition of antacids and bitters; the infusion of chiretta seems to fulfil all these indications better than any other form of vegetable bitter. Antimony is a great remedial adjuvant, our object in these complaints being to direct the restoration of the cuticular secretion to its normal condition. From experience prior to my residence in Bath, I have reason to believe that Plummer's pill derives its chief efficacy in these affections from the antimony, and not from the mercury.

In my late father's practice at the establishment for pauper children at Norwood, this was a favorite combination, viz., the other ingredients of the Plummer's pill with the mercury omitted. It is a singular circumstance that, in the many hundreds of cases in which I have seen Plummer's pill regularly administered, for weeks together, in combination with the thermal treatment, in no single instance have I observed ptyalism. One or two of the antimonial pills may be taken every night, and during the day two fifteen minim doses

of the antimonial wine in a saline mixture. The virtues of antimony have been much overlooked, it is in many cases the best adjuvant; it may be taken for a considerable period without danger, and acts upon strictly rational principles. During the antimonial course, the best period for bathing is the latter part of the day; and the patient, upon leaving the bath, should be packed in blankets for twenty minutes at least, in order that the cutaneous function may be encouraged, and then he must be enjoined to return home quickly, that the skin's action may not be checked. I feel persuaded that the reason why so much good is done in these affections in the Bath Mineral Water Hospital may be found in these two circumstances—*the packing and the confinement to the house on the day of bathing.*

It is quite certain that, by means of this excellent charity, the poor enjoy, in a far higher degree, the advantages of the thermal treatment than the rich and noble who visit the springs.

The next remedy upon the list is arsenic, which undoubtedly possesses a very high value in the treatment of these diseases. It must, however, be remembered that it is a remedy possessing a cumulative effect; that it exerts its influence directly upon the mucous membranes; and if continued too long, after its constitutional effects

are developed, may cause a susceptibility to catarrh, which becomes constitutional with the individual once subjected to its influence.

The researches of my friend, Mr. Hunt, shew that comparatively large doses of this mineral, continued for several weeks, have never been known to produce effects destructive or injurious to life; but I have seen many instances in which its constitutional effects have continued for years, in which every catarrh has produced a species of influenza, the direct cause of which I have traced to an arsenical course too long continued. So well marked are the symptoms, that they cannot be mistaken by any one who has once observed them; the most prominent being an injection of the vessels of the conjunctivæ—a pathognomonic sign of an arsenical course which has been continued until full constitutional effects have been produced.

I had an opportunity of shewing to the members of the Provincial Medical Association, at their visit to Bath in 1848, a case in which less than half a drachm of Fowler's solution had been administered in divided doses, but in which the constitutional effects of the mineral were present; and the case was published in the Journal of the Association.

I am inclined to believe that the Bath Waters used in combination with arsenic, modify, in some

degree, its action. Doses of from three to five minims of the solutions, taken during a course of the waters, seem to act more powerfully than larger quantities at any other time. This may arise from the stimulant effect of the waters. The medicine is not then acting upon an entirely diseased, but upon a partially restored membrane, more liable to its effects than it would have been had the mineral been employed alone. I am certain that the exhibition of arsenic in combination with the Bath Waters requires close and assiduous watching, and that cases have been cured by their united agency when both have failed when separately employed.

When the disease appears to depend upon the uric acid diathesis, and is attended by dyspeptic symptoms, a course of alkaline remedies may be advantageously pursued.

Dulcamara, sarsaparilla, and other remedies of a similar character, appear to exert no particular influence in combination with the waters. Our object in the employment of the Bath Waters is manifestly to abstain from the exhibition of mere tonics and supposed specifics; the indications are to restore the healthy action of the skin by the improvement of the secreting functions generally; to overcome the perverted habit, to improve the digestion and circulation; and so to use the

thermal treatment, that, where it fails of itself to effect a perfect cure, it may be so combined with other remedies that it may assist to do so. These remedies must be selected with care and judgment, and so combined as mutually to assist each other. The cure is, from the nature of the disease, of necessity protracted; so that, where health is the object, it is necessary that our patients should, when improvement steadily progresses, make up their minds fully to persevere.

I must now refer to the external adjuvant remedies. As a general rule, it may be observed that the ointments which contain animal grease are bad, and that cerates are better than unguents, the Glycerines of the British Pharmacopœia better than either; Vaseline and Ozokerine may also be mentioned as excellent applications in themselves, and as equally excellent bases for the admixture of other substances. If we consult the works of the older writers upon these diseases, we find that almost every variety of external application has been, at one time or another, extolled for its supposed specific effects; and the old case books of the Mineral Water Hospital fully demonstrate that the most opposite plans of treatment have been attended with equally beneficial effects. I am persuaded that, in many of these instances, the Bath Waters have cured these diseases *in*

spite of rather than *in consequence of* the adjuvant remedies. My own experience fully proves that the simpler our treatment, the better the patient, and that we should employ our restorative means upon rational rather than upon empirical principles.

As long as the patient improves, the Bath Waters may be fully employed externally and internally while this improvement in the cutaneous affection continues. And as long without injury to the general health, all extraneous applications are worse than useless, excepting those which tend to soothe irritation, among which may be mentioned cerates or glycerines of the oxide of zinc, nitrate of bismuth, carbonate of magnesia, petroleum barbadense, nitrate, and red oxide of mercury; each cerate being formed by the addition of a drachm of the drug to seven drachms of the vehicle. Iodine, externally applied, is also useful in some tedious forms of these diseases.

In the employment of all external applications, one general rule is to be observed, that a very small quantity suffices, and should they exert no beneficial effect after a few applications, they require to be changed.

Sometimes the bland vegetable oils will fulfil all our wishes, and this may be said more particularly of glycerine.

ECZEMA AND IMPETIGO.

These diseases of the external surface, in the majority of instances, arise from derangements of the digestive and assimilative functions. They require a strict attention to diet during the course of thermal treatment, which may be combined with antiphlogistic means until all inflammatory appearances have subsided, and then the Bath Waters alone will complete the cure, unaided by any other adjuvants than the milder aperients occasionally administered.

SYPHILITIC ERUPTIONS.

The eruptions of syphilis derive manifest advantage from the external and internal use of the thermal waters. The wandering nocturnal pains are relieved, the disposition to periostitis checked, the broken constitution renovated, and the general health restored. There is, perhaps, no form of general cachexia in which they produce a greater amount of decided benefit, than in these melancholy cases.

In this brief outline of the benefits derivable from the thermal waters in chronic skin diseases, I have been embarrassed by the weight of the materials at my command. Living, as I did, for a period of seven years, in an hospital containing

every variety of these affections, from every part of the United Kingdom, hourly under my personal observation ; I have been enabled not only to see that medicines have exercised but little benefit in their treatment, but that, when rightly employed, the thermal waters of this city are a remedy of great value, and a means of cure which no mere combination of remedies, however powerful, can compete with : and these observations have since been fully confirmed by eighteen years' private practice. I cannot help expressing my surprise that, with these daily evidences of their value their use should ever have undergone any decline. Dr. Cheyne, in 1717, imagined this to arise from their public and indiscriminate use without medical advice ; but although there is much truth in the learned Doctor's remarks, I am afraid the truth lies nearer home, viz., the neglect they have received from the medical profession itself. I should feel disposed, in all chronic cutaneous affections, which have resisted the ordinary modes of treatment, to give them a judicious trial, either alone, or as adjuvant to any plan of treatment that might be deemed desirable.

CHAPTER VIII.

Chronic Debilitating Diseases of the Uterine Function.

THIS class of disorders will comprehend all those functional derangements which exist with loss of health and strength without manifest structural change. The first and most important are those diseases which are characterised by diminished, excessive, or peculiar secretions; the first most commonly attend the young, the second the advanced, while the latter are common to all the periods of uterine vigour.

The diseases of diminished secretion are comprehended under the nosological terms of amenorrhœa, dysmenorrhœa, and chlorosis—diseases of pure functional debility. In them chalybeates possess properties which no other remedies lay claim to, and the Bath Waters, have from time immemorial, been considered of extreme value as a remedial agent in their cure when taken internally, and externally applied by means of the douche, to the back and loins of the patient.

Hysteria, with its Protean forms of disease—now simulating paraplegia, now disease of the hip joint, sometimes neuralgia, with exquisite sensibility, and sometimes disease of the head, chest, or abdomen, with symptoms of an alarming nature were we not familiar with its erratic manifestations—is a disorder which is relievable by the exhibition of these waters. Medicine in this affection acts both mentally and physically, in promoting a due return to health. There is a lassitude of body, a loss of control over the will, which renders every exertion painful and distressing. One object which the practitioner should have in view, is the gentle but stern command to employ every means which can amuse the mental faculties, and at the same time call into exercise the muscular powers: these cases, indeed, at the same time that they demand our most powerful sympathies, require us to be firm in the use of every means which can arouse the patient from her morbid condition.

Many such patients are brought to Bath in a perfectly helpless state. In our examination of them, a very little pressure will produce violent pain in the lumbar portion of the vertebræ; in fact we find the spine abnormally sensitive; and if we continue our examinations, we can transfer, as it were, this morbid sensitiveness to every portion

of each extremity. In these cases we find the upper eyelid tremulous; and should a paroxysm of hysteria take place during the examination, the pupils, easily acted upon by the light, will invariably converge towards the nose. Increased secretion from the kidneys invariably occurs, with costiveness, the secretions from the bowels being dark and offensive, and there is frequently considerable œdema in the lower extremities.

In the aggravated forms of hysterical paraplegia, in which the lower extremities are perfectly motionless from defect of volition, attended with acute pain throughout the vertebræ, much mischief to the health of the patient may arise from our treating the pain of excessive sensibility as the result of inflammatory action; we may bleed till we are tired, and cover the back with the incisions of the scarificator without producing the slightest effect upon the functional disease, excepting that which follows great loss of blood—increased pain in the head upon the slightest mental emotion, and an aggravation of all the symptoms.

Hysterical paraplegia is to be regarded as a disordered condition of the nerves of sensation, which become acutely sensible; and of the nerves of volition, which cease, as it were, to act. The first effect produced by it is depraved or suspended secretions; the second, loss of power over some.

of the voluntary muscles; and as the disease advances in intensity, hæmatemesis, and more rarely, hæmoptysis occur, as vicarious efforts to supply a natural secretion, to the establishment of which, all our remedial measures must be directed.

The effect of strong purgatives in these cases contra-indicates their employment, because each dose necessitates a repetition, and reproduces the costiveness it was given to overcome. The daily use of a mild enema, at a stated hour, will re-establish the natural action of the bowels,—one of the primary indications to be fulfilled.

Patients will frequently refuse to make even the necessary exertion required to feed themselves, lying, as it were, a burden upon their attendants, and crying out with pain upon the slightest touch, so exquisite is their morbid sensibility. The physician, therefore, is required to point out both the moral and the medical treatment.

Kindness, with firmness, is necessary. The medical attendant must direct that the patient be dressed and laid outside the bed every day prior to his visit, and that her mind be amused by cheerful society, particularly desiring that every one who approaches her shall speak the language of hope, not pity; her nurse must be one on whom the medical attendant can rely implicitly,

who is required to unite sympathy with firmness. As soon as she is able, she must be removed from her bedroom to the sofa ; and, as soon as she can bear it, be wheeled about in the open air in a chair daily. Everything must be done gradually, the progress made must be stealthy, rather than forced ; the general health attended to, and not mere symptoms prescribed for, as is too often the case.

It is desirable that change of air and scene should speedily be resorted to, and Bath, from possessing remedial agents of great value, should be the place recommended.

Her apartments should be upon the ground floor. She should not pass the day in her bedroom ; her diet should be light and nutritive, with total abstinence from all stimulants : and as soon as she has recovered from the fatigue and excitement of her journey, the thermal treatment may be commenced.

This will require care and caution as long as she is unable to leave the house. She may take her breakfast in bed, and her bath (at a temperature of 98° Fahr.) in her room, one hour after that meal, retiring to bed immediately for a period of twenty minutes, when she must be dressed and laid upon the sofa in the adjoining room. Friction by an attendant, with passive motion of the trunk upon the lower limbs, may be employed in order

to accustom her to a sitting posture, provided no severe pain be given; and the bath may be repeated twice or three times a week, at the discretion of the medical attendant: while stimulating liniments with sinapisms, may be employed as excitants to the cutaneous surface of the back.

She must be drawn to the Pump-Room for the purpose of drinking the waters, which should be done twice or three times daily, the quantity being regulated by such circumstances as the medical attendant may deem desirable; and the use of crutches may be directed for *in-door exercise only*.

When she is able to bear the transit, she should be conducted to the baths and use the wet douche, gradually increased in number and force; and then the tepid thermal shower bath may be alternated with it for a period of six or eight weeks.

Adjuvant remedies, given with a desire to increase the effects of the waters, interfere with their beneficial action in this disorder. Opiates administered for the relief of pain, invariably increase the subsequent suffering, from their effect upon the liver and other secreting organs, which are impeded in their functions by their employment.

Anti-spasmodics afford but temporary relief; and depletory remedies increase the evil by diminishing the constitutional vigour.

Should heartburn and indigestion exist, the Bath Waters, internally exhibited, will restore the tone of the stomach, and will be retained when all other remedial means have been rejected. It is wonderful how soon, in these cases, they relieve the irritability of that organ: they seem, as it were, to imbue it with new life, and as our object is to exhilarate the spirits of the patient, they fulfil this indication marvellously.

I have said that our main object is to restore functional derangement; and when we refer to the state both of the biliary, gastric and intestinal secretions, it is plain that the simpler our mode of treatment, the better for the patient. The mere production of an alvine discharge by means of powerful purges, causes no amendment whatever in the state which leads to the vitiated secretion; the healthy condition can only be restored by acting directly upon the muscular fibre of the bowels themselves, by imparting power to the nerves employed in digestion and assimilation, and the Bath Waters fulfil this indication also, a domestic enema being daily employed to relieve the lower intestines. Experience convinces me that the costive and irregular condition of bowels, under which the majority of females labour in this climate, are mainly to be attributed to the use of drastic cathartics, and that they are to be overcome

only by habituating themselves to a regular period of evacuation. Nature demands that all should study her dictates; every object in creation obeys the law of alternate activity and repose; periodicity is as universal in the animal and vegetable world as gravitation is in the inanimate: the habit once established, pain will compel obedience; and health may be preserved through an unbroken series of years, without the aid of purgatives, by a simple adherence to this plan.

The period usually prescribed for a course of the waters in these cases, varies from ten to twelve weeks, with remissions at the end of every fourth week; and should the periodic uterine function return, their use must be suspended during its continuance, both in this and other disorders.

STERILITY, OR BARRENNESS.

The older physicians practising at these springs, in their various essays, point out the extreme value of the Bath Waters as promoters of uterine vigour in married females, who have either never borne children at all, or for a few months only. There can be little doubt that their experience fully confirmed this; indeed I have myself seen instances in which they have by their tonic power enabled the constitution, as it were, to invigorate

itself by the alteration of vitiated and impaired secretions. Pregnancy is no bar to their cautious employment, and they may be continued safely until the fourth month; nay, in one case under my direction, they were commenced at that period, and continued until the seventh, when the patient returned home in a state of general good health and spirits, to which she had long been a stranger.

There can be no doubt whatever, that, in almost every case of uterine functional disorder, steel, in its various forms, at one time or another, is a suitable remedy; and also that change of air powerfully contributes to the restoration of the healthy secretion.

Nature, in this city, has poured forth from her own laboratory a combination of iron with various mineral bodies in a form the most agreeable to the debilitated invalid, and placed the thermal springs in the most sheltered and delightful valley in England, accessible by an easy transit from every point of the United Kingdom, and in a city abounding in every convenience which the most fastidious invalid can require.

For the poor, the gratitude of the last century erected the Mineral Water Hospital, as, in the present and previous one, it restored the noble and imposing Abbey Church; both buildings having been completed by those who had recovered a

long-lost health by the use of the bounteous fountain which the Almighty caused to flow in the vale of Bath. With these monuments before us, who can say that these springs possess no more virtue than mere hot water?

CHAPTER IX.

Chronic Diseases of Functional Origin.

BRAIN FAG.

I have classed together, under the above name, many functional disorders which afflict those who make great use of the pen, and, at the same time, take but little exercise—overworking their mental faculties without sufficient bodily fatigue ; the subjects of them being authors, journalists, solicitors, clerks in merchants' counting-houses, and other persons who are engaged in mental industry, not requiring, but rather preventing bodily exertion.

The causes of the disorder are manifestly, in the first place, severe thought and sedentary occupation ; the effects are those complicated functional derangements which, unfortunately, I can describe from my own personal experience, and from cases among gifted and talented men of letters which have fallen under my observation.

They are, severe dyspepsia, loss of appetite, irregularity of the hepatic and renal secretions, with diarrhoea alternating with costiveness, hæmor-

rhoidal tumours with frequent micturition ; watchfulness, irritability to the slightest external impression, nervous dreams, palpitation of the heart with a weak and irregular pulse : accompanied by intermittent and ill-defined headache.

The combination of all, or some of these symptoms, constitutes the first stage of the disease, during which the sufferer pursues his intellectual employment, and satisfies himself with the treatment of its more prominent symptoms.

In the second stage, the lower extremities begin to lose their nervous power, from the pressure applied by the sitting position. Gradually the feet lose their motive action, and their sensation becomes impaired ; the patient describes himself as walking, as it were, upon horsehair ; the muscles of the legs and thighs waste from want of their due exercise ; cerebral mischief sets in, and the patient is compelled to abandon all employment : his hands, dropping to his side, refuse any longer to write down his thoughts ; and he himself having become totally helpless, is compelled to resort to medical advice.

He has now arrived at the third, or critical stage of his disease, for upon his treatment now depends either the total loss of health, or his complete, though gradual, restoration. His symptoms are alarming, his state paralytic, shewing evidence of

disease of the cerebro-spinal axis, and for his supposed relief not unfrequently cupping, leeches, and, it may be, medicinal depressants are prescribed. He becomes rapidly worse; all his *symptoms* increase, and still the same system is pursued: the causes of the disease are unlooked for, and their *debilitating* effects not understood. Should complete hemiplegia occur, we find it to have taken place a few days subsequently to a venesection, which we may regard as its cause.

In these cases, the brain gives repeated warnings, transferring, as it were, the effects of excitement to the distant nerves, which fail one after another, according to their importance in the animal economy, the great sympathetic alone preserving its integrity.

During the railway panic, many persons suffered from this disease in its various forms, and not a few found their way to Bath, where they came under my daily observation. The history of one is the history of them all. The patient, describing his case, says, "Some time since, I had great mental anxiety requiring me to devote several hours a day to studious writing. Being then engaged in preparing a work or getting up evidence in a case for Parliament, my meals were irregular; I was up early, and late in my office, and suffered greatly from irregularity of the bowels. In a short

time, I lost in a great degree the use of the extremities, headache came on, and I was compelled to apply to my medical attendant, who cupped me on the neck, applied blisters, and ordered me to live sparingly. I became weaker and weaker, until I was advised to come to Bath, as a last resource."

These cases are sometimes considered to arise from *ramollissement*, or from some excitement of the brain leading to slow inflammation. In some we see a vigour in regard to extraordinary mental effort, while the ordinary daily operations of the mind become apparently obtuse and blunted, the duality as it were between the ideal and the actual being entirely overbalanced. In addition to the cases which the Mineral Water Hospital presented to my notice, and in those which I had the opportunity of learning from intelligent patients the rise and progress of their disease, I have been consulted by coroners, magistrates, and County Court judges, in whom this disease had arisen from too close an application to the duties of their several offices.

There are two grand diagnostic marks, which, in addition to the previous history, distinguish these cases from structural disease of the brain. The first is the complete clearness of the intellect, the second the state of the pulse, which will be

found to manifest distinct debility of the circulatory system, the artery seems as it were contracted in its calibre, and weak in its beat; its pulsations never exceed the healthy standard: they are laboured, and easily compressible.

The prominent symptoms are complete prostration of nervous and muscular energy, with increased mental power, the mind, as it were, flourishing at the expense of the material frame. In some cases we see great hilarity of spirits, in others great despondency, the ordinary tone of the mental faculties being influenced by the physical disease.

It will be seen, by the above description, that the disease is one of general nervous debility, and that it requires a plan of treatment which will invigorate the general tone of the system.

The first and most important point is to debar the patient from all mental exertion, and to promote, as much as possible, the restoration of his digestive functions; the second, the administration of chalybeates.

A full course of the Bath Waters, in conjunction with galvanism, carry out the requirements of the legitimate practitioner, as well as those of the empiric. Let us enquire by what means. The Bath Waters strengthen and brace the nerves of the dyspeptic stomach, when iron in its various

forms disagrees, and when the whole farrago of tonics have been tried in vain; they restrain vomiting and water brash, and materially improve the digestion of aliment, when the stomach is so irritable as almost to reject the slightest meal.

In combination with electricity, they impart warmth and motive power to the limbs, in a far higher degree than mesmerism has ever pretended to do. As a homœopathic remedy, the most enthusiastic follower of Hahnemann cannot object to them, since they contain but an infinitesimal quantity of iron in a large proportion of a bland and grateful fluid. The hydropathist, also, must allow that these waters fulfil all the indications he professes to carry out, with the great advantage, that here the tonic virtue resides in the water itself, which may be applied at a temperature varying from 60 to 117 degrees Fahr.; and, it must be confessed, with more grateful feelings to the suffering invalid than the application of pure cold water, which cannot in every case be so nicely and agreeably regulated as that which proceeds from thermal chalybeate springs.

The blood in all these cases contains a larger proportion of carbon than is essential to the due performance of its healthy function; the Bath Waters increase the red particles of the blood, and restore the circulation to its healthy standard.

The accounts of the benefits derived from the cold water cure have reached us by the publications of those who evidently laboured under the disease I am now treating of in its first stage. It would not be difficult to judge, from the writings of Lord Lytton and Mr. Lane, how much benefit they derived from the absence of mental fatigue, and the enjoyment of the pure air of the Malvern hills in pleasant society—the latter, with the diet enjoined, was the adjuvant, the hilarity produced by the former, the cure.

Now, at Bath, I have seen patients cured, who have in various parts of the kingdom and on the continent tried the cold water cure without relief; nay, a few years since, one of these establishments was started in this city without success, because its projectors forgot that here we had springs which *could* cure the diseases which the cold water system only *professed* to do.

From practical experience I can decidedly affirm that unless the case has been allowed to proceed very far unrelieved, the Bath Waters are capable of curing the diseased condition of nervous function which I have classified under the name of “Brain fag,”—intense functional derangement of very frequent occurrence, in which the cause is unlooked for, and which, unchecked, in many instances terminates in incurable loss of power,

and frequently in complete paralysis, a state in which all that can be hoped for from this or any other plan of treatment is relief, and not cure.

The approach of disease in these cases is slow, but sure : gradually one function after another becoming impaired. The sufferers usually lead lives which cause them to be irregular not only in their periods of meals, but of retiring to rest. Frequently, after a day of severe mental labour, intellectual society has charms for the man of letters, which form a pleasing contrast to the daily labours of his life : thus the demand upon his brain is unceasing, nature gives her warnings unheeded, still the struggle for name and fame goes on, or the still harder effort for the means to supply the daily wants of life ; existence, as it were, becomes one unceasing mental effort, and the physical frame succumbs. The energies of the brain are concentrated upon thought, so that the power of exertion becomes lost, and the body sinks into a state of disease.

The athletic form becomes weakened, the face pallid, the muscles, no longer called into action, part with their fibre to maintain the severe drain caused by the overworked brain upon the system at large, and nature is at last overcome, the physical falls before the intellectual, and disease usurps the place of health.

The disease usually takes place in the full vigour of life, so that mental despondency is superadded to bodily infirmity.

The great object is to check the disorder in its first stage, by remedial measures, by strict attention to diet, regular hours, change of scene, and by abstinence from all mental labour. Where these are ineffectual, a course of the Bath thermal treatment in conjunction with galvanism will rarely fail to cure.

DEBILITY SUCCEEDING FEBRILE DISEASES.

There is a class of functional disorder which is much benefited, not only by treatment, but by the warm westerly breezes which prevail in Bath. I allude to the convalescent stages of severe fevers, and other diseases in which the system has become debilitated by the long duration of the malady.

In these cases the patients are generally tired of taking medicine, however useful, and are exactly in that condition when the removal to a warm and sheltered locality is desirable; and it was from this circumstance that Bath derived its Saxon appellation of Akemannesceaster—the City of the Sick Man,—which name is still preserved in the old Roman road of Akeman Street.

The Bath Waters, in these cases, soon produce their beneficial effects; even a week's drinking

will cause the patient sensibly to improve in absolute weight, and a three weeks' course will restore him to perfect health.

DEBILITY OF LIMBS, FROM FRACTURES, DISLOCATIONS, AND CONTUSIONS.

In the treatment of various injuries produced by external violence, it is absolutely necessary that perfect rest should be enjoined by the surgeon for the relief of the implicated limb: this for the time interferes with its natural motion, the injury itself is cured, but the limb remains wasted and weak.

Unfortunately, after the surgeon has discontinued his attendance, and has stated that the limb is well, the patient continues the rest enjoined *only* during the cure, and the use of the limb is impaired, while permanent loss of power is the result.

In these cases, the Bath Waters, combined with a judicious exercise of the affected part, materially assists in restoring the use of the affected muscles. I have repeatedly seen limbs, which at first sight I was inclined to believe were permanently distorted, by the application of the douche, gradually increased in force, completely restored to the normal condition; and where this has not been successful in the cure,

they have been much benefited. Perhaps one of the difficult lessons to teach a patient, is the necessity of using personal exertion. He says the limb is weak, and he is unwilling to make the slightest effort. You must impress upon his mind that muscular vigour is only imparted by his own exertions.

In these affections much benefit arises from friction by an attendant, and in Bath there are nurses who make a business of producing artificial movement of the muscles in these cases somewhat after the manner of, and certainly founded on the same principles as those which underlie, the movement cure of Dr. Ling, of Stockholm.

Numerous cases have been admitted into the Hospital, where the patient, not knowing that he was able to do without them, has come in with two crutches or sticks. A trial made, if only of two or three steps, assisted by the hand, convinces him that these may be taken without the supports; he is ordered not to use them in the house, and he recovers; and the physician often wishes that he could treat his private patients in the same decisive manner.

In cases where a lower extremity is affected, it is better that the patient should walk a few steps in his room without crutches, than a mile in the open air with them; and in those in which the

arm is affected, it should not under any circumstances be carried in the sling hitherto used, but be allowed to drop to the side, and should constantly be subjected to friction and exercise. Galvanism in the bath, or by immersion of the limb in the water medium, is the most useful adjuvant, the relief being more speedy than could be anticipated from the bath alone.

When the various joints have sustained some degree of immobility, either from disease of their structures, or from the position required for the cure of other affections, among which erysipelas may be mentioned, the free use of the limb may be restored by the galvanic bath, which more speedily increases the volume of muscular structure, and the motive power of the affected part, than any other means that can be recommended.

In fine, wherever, without structural disease, loss of muscular power exists, that has not been allowed to proceed until the synovial fluid (being no longer required) is not secreted, the effects of the Bath Waters, in conjunction with galvanism, are surprisingly efficacious; but where rigidity of joints has been allowed to continue for any length of time, relief is all that can be expected.

DYSPEPSIA, AND HYPOCHONDRIASIS.

Without entering into a systematic description

of this disordered condition, it may be sufficient to observe, that a six weeks' course of the Bath Waters, internally administered, with a bath twice a week, will cure simple dyspepsia; and that lithiasis, and other disordered conditions of the renal secretion, are, from the diuretic effects of the remedy, invariably relieved by them, the diet recommended being rigidly pursued during their employment. I am inclined to think that the vaunted power of the Waters in calculous complaints, which is so constantly prominent in the writings of the older authors upon the Bath Waters, arose from their power of relieving the uric acid diathesis; indeed, I should recommend their free use in all such cases, provided there were no evidence of structural disease to contra-indicate their use.

For the treatment of this condition of the digestive apparatus, the physician fulfils but half his duties who resorts to the use of the various specifics which have been recommended for its cure or relief, unless he directs at the same time the ordinary diet of the patient; articles which may be taken with impunity by the healthy, absolutely cause the affection in the weak; thus broths, gruels, the various malt liquors, and wines of a thin body, will produce dyspeptic symptoms, the former from distension, wines and beer from their

fermenting qualities, while spirits, acting directly upon the mucous membrane, impede the function of digestion.

The distension caused by the constant use of tea, and the fact of its containing a free acid, will, I think, sufficiently explain why those who drink much of this favourite beverage are invariably dyspeptic.

The sensation denominated heartburn is the first symptom of simple dyspepsia, the best remedy for which is the common Spanish liquorice, which possesses the power of checking this digestive fermentation in a far higher degree than the antacids, without producing any of their ill effects. I trust that the efficacy of this remedy will excuse the mention of so simple a cure, the use of which has been sanctioned by many years of personal experience.

Every remedy, however, which is given for the relief of a prominent symptom only, fails at last in its effect; and both doctor and patient getting heartily tired of each other, the former recommends change of air, the latter resorts to the empirics, who fleece him and fail one after another in their boasted means of cure; at last he is recommended to seek for relief from the Waters of this city.

Dyspepsia, as I before observed, is common to many of the diseases cured by the thermal treatment, and where it exists alone, and the patient is enabled to take sufficient exercise, his mind being freed from anxiety, his cure commences with the first glass of the Waters, and makes so rapid a progress, that in many cases a few days only suffices to complete it. In order that it may be permanent, I generally advise that they should be employed at least seven days after all dyspeptic symptoms are removed, desiring the patient to adhere to my rules of diet after he leaves Bath.

I saw a remarkable case, shewing the necessity of a strict observance of this rule. A patient who had been drinking the Waters for three weeks for dyspepsia, and who was about to return home cured, was invited by a friend to drink a tumbler of porter. He did so; the next morning he sent for me in great agony, the messenger stating that all the symptoms had returned. I advised an aperient, and a renewal of the internal use of the Waters; this was complied with, and he declared when he took his farewell, that he thought the second course had done him far more good than the first, and promised a strict observance of the rules which I laid down for his future guidance.

Dyspepsia is frequently produced in those who, under the idea of strengthening the system, eat more than one meat meal a day. Nature does all she can to accommodate herself to this increase of labour, but the time surely comes when the stomach rebels, and atony takes place; heartburn, flatulence, pyrosis, and congestion of the liver being the result. Carthartics are had recourse to, constipation succeeds their frequent employment, and the patient becomes afflicted with simple dyspepsia.

In the Mineral Water Hospital, where the patients are supplied with a liberal, but at the same time a restricted dietary, much benefit accrues from such restriction. The disease is relieved, and in the majority of instances cured, by the action of the waters upon the nerves of the stomach itself, which produces a greatly-increased appetite. This appetite the patients gratify by eating bread, the allowance for each being one pound daily; while that of meat varying from four to eight ounces, according to the circumstances of the case, enables them to eat just so much of the latter aliment as suffices for perfect digestion.

The Mineral Water Hospital Dietary is as follows :—

ORDINARY DIET FOR MALE PATIENTS.

1 lb. of Bread and 1 oz. of Butter daily.

1 pint of Tea Morning and Evening.

DINNER.

Sunday and Thursday	Roast Meat, 8 ozs. Potatoes, $\frac{1}{2}$ lb. Milk, $\frac{1}{2}$ pint.
Monday and Friday -	Soup, 1 pint. Rice Pudding, $\frac{3}{4}$ lb.
Tuesday - - - -	Boiled Meat, 8 ozs. Vegetables, $\frac{3}{4}$ lb. Milk, $\frac{1}{2}$ pint.
Wednesday - - - -	Soup, 1 pint. Potatoes, $\frac{3}{4}$ lb.
Saturday - - - -	Preserved Meat, 6 ozs. Vegetables, $\frac{3}{4}$ lb. Milk, $\frac{1}{2}$ pint.

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ORDINARY DIET FOR FEMALE PATIENTS.

1 lb. of Bread and 1 oz. of Butter daily.

1 pint of Tea Morning and Evening.

DINNER.

Sunday and Thursday	Roast Meat, 6 ozs. Potatoes, $\frac{1}{2}$ lb. Milk, $\frac{1}{2}$ pint.
Monday and Friday -	Soup, 1 pint. Rice Pudding, $\frac{3}{4}$ lb.
Tuesday - - - -	Boiled Meat, 6 ozs. Vegetables, $\frac{3}{4}$ lb. Milk, $\frac{1}{2}$ pint.
Wednesday - - - -	Soup, 1 pint. Potatoes, $\frac{3}{4}$ lb.
Saturday - - - -	Preserved Meat, 6 ozs. Vegetables, $\frac{3}{4}$ lb. Milk, $\frac{1}{2}$ pint.

 Watercress for Tea when in season (twice a week)

It were well if the more opulent classes, resorting to these springs, were to adopt the Mineral Water Hospital dietary as an adjuvant to the cure. From it we learn that a man, no matter what his previous habits may have been, may be preserved in perfect health and increase in weight by the use of the Bath Waters with four meat

meals a week, each weighing (after cooking) four ounces, which, as his cure progresses, is increased to eight, the diet on the other three days consisting of strong broth and rice pudding.

Where dyspepsia proceeds to hypochondriasis, a course of the Bath Waters, with the amusements afforded by the city, rarely fail in their good effects, except there be an hallucination of mind, when the disease is no longer amenable to treatment as far as physical remedies are concerned.

I am very much disposed to consider the Bath Waters as a remedy of great efficacy in functional disorders of the digestive organs. I would accord to them a much higher meed of praise than they have of late years received, and I consider their uncombined exhibition as more likely to restore healthy action than any other combination of remedies. These cases have, in the majority of instances, gone through the whole routine of treatment, and we can scarcely suggest any form of practice which has not been ineffectually prescribed before the patient seeks the thermal springs. At the same time they require careful superintendence, in order that the doses of the waters may be regulated and their effects watched; sometimes, indeed, the internal exhibition may disagree, when a carefully conducted course of bathing will alone effect a cure.

CHAPTER X.

ARTHRITIC DISEASES.

*Gout, Rheumatism, Rheumatic Gout, Nodosities,
and Contractions.*

As these diseases have in general terms a character common to all of them, viz., an inflammatory condition of one or more joints, I propose, in reference to our present inquiry, to consider them under one general head.

They are seldom seen by the practitioner at Bath, until all acute symptoms have disappeared, his duty being to employ the thermal treatment so as to counteract the debilitating effects of previous disease and treatment, to repair the mischief produced by the continuance of the joints in one position after the acute stage of the disease has subsided, and to superintend the gradual restoration of the patient's general health.

The Bath Waters are well borne in ordinary cases both internally and externally where debility is a prominent symptom. The digestion and

secretions are restored, the blood is changed in its character, and the absorbents stimulated to a due performance of their functions.

The Waters, however, require caution in their application, the production of an active attack being a common occurrence:—I use the word active in contra-distinction to acute, which should be restricted to the primary accession only.

When a course of the waters produces such an active attack, it is to be regarded as a favourable indication; they require then however a short cessation, and the disease is to be treated upon general principles, and when subdued, the waters invariably restore the patient's general health, and a greater freedom is given to the affected limbs.

During the last century, many persons subject to gouty attacks were in the habit of resorting to Bath when the disease was “lurking in the system,” in order that it “might be driven to the extremities” by the stimulus afforded by the thermal Waters. The relief was obvious; and the subsequent course, by its restoration of the function of the digestive organs, rendered the system more healthy and less liable to frequent attacks.

It must be admitted that the more temperate customs of the present century have rendered gout

less common than it was in the preceding. The so-called rheumatic gout however is still a common disease, not merely among the well-to-do, but equally and perhaps indeed more especially among the poor and hard worked classes of society; and well marked cases are met with in both sexes, young and old.

As a general rule, patients are not recommended to resort to Bath, until considerable immobility of the joints has taken place. It were well that they were sent thither as soon as all acute symptoms had subsided; then, when the system is endeavouring to free itself from its diseased condition, when the joints are enlarged, and the stomach labours under dyspepsia, causing the kidneys to secrete an abnormal fluid, the thermal treatment is most desirable, the restoration to health most complete.

It would be foreign to my purpose to draw nice distinctions between the causes of gout and rheumatism. I have to consider them in their chronic form as modifications of diseased actions in the joints, with general derangement of the system; their more prominent symptoms being dyspepsia, pain and swelling without actual, or at most with but slight redness, with degeneration more or less complete of the articulations, and with contraction and rigidity of the fibrous structures, all arising from a previous inflammatory condition.

The fibrous structures of the whole system appear to be more or less involved in these diseases. Repeated observation has convinced me that the blood in them is in a condition of hyperinosis throughout the acute stage, because these structures are in a state of inflammation more or less severe. I have seen in the practice of the late Dr. Barlow, when bleeding was extensively practised in the Mineral Water Hospital, many cases characterised by debility, wherein the blood presented the so-called buffy coat after repeated venesections; and in one I obtained buffy blood by the cupping glass, experience convincing me that the buffy coat was characteristic rather of the nature than of the extent of the morbid action.

What are the results of this specific fibrous inflammation? Either the secretion of synovia is suspended, and crepitation of the joints results; or, this secretion is altered in its quantity and character, and earthy solidifying concretions are deposited in its stead; metastasis occurs, either to the membranes of the brain, heart, chest, or stomach, and unsuspected *post mortem* appearances are discovered when the disease terminates fatally, as I have in more than one instance verified.

Gout and rheumatism should be considered, in their acute stages, as varieties of the same morbid

condition produced by different causes: in the former by errors of diet long continued, in the latter more commonly by cold; the latter cause, acting probably on a peculiarly constituted system, *i.e.*, on a system having a special susceptibility to the disease, producing the affection denominated rheumatic gout.

They require to be treated upon the general principles which should guide us in the treatment of all inflammatory conditions.

Great care must be taken, during the acute and active stages of these diseases, that the patient be as much as possible protected from currents of cold air. Thus although while in bed a circulation of fresh air is absolutely essential, the windows must be closed should he require to be moved or uncovered. The disease, apparently confined to the affected limb only, involves the whole system in diseased action, and metastasis occurs from very slight exposure; the fibrous element of the arteries become implicated, and through them the disease is as it were transferred to the heart and pericardium, if suddenly checked in the extremity, where Nature locates the effects produced by internal causes.

The distinctive characters are well marked in the severe distortions which are left by the soothing treatment, the worst cases being those

in which the disease has been treated in its acute stage with opiates and colchicum too long continued. The patient being considered to be incapable of the slightest exertion, the disease is encouraged by the vitiated air of an over-heated bedroom,—for nurses too often consider pure water for ablution, and the fresh breeze of heaven, as abominations in a sick room ; and thus stifled with a superabundance of flannel, narcotized with opiates, and motionless from long confinement, the disorganizing disease pursues its unchecked course long after the physician has taken his leave of the more acute disease which called for his professional aid. Nor are stimulants and high feeding, under pretence of keeping up the patient's strength, forgotten ; so that a disorder which medical skill, temperance, fresh air, and moderate exercise would have arrested or subdued, is allowed to proceed until it becomes a chronic and almost incurable disease ; the limbs, accustomed to be passive, lose the power with the will to move them, and joints become immovable solely from want of effort. A student seeing these cases for the first time, would exclaim, that acute rheumatism, when severe, has no convalescence.

I have seen hundreds of cases wherein the limbs, from being confined entirely to one position, or if moved at all, from being simply moved *en*

masse and without any of the natural motion of one portion of the joint on another, have at length had their articulations disorganized and rendered nearly immovable, but which have yet been greatly restored by a steady perseverance in a course of the Bath Thermal Waters, with the auxiliary agents, galvanism, friction, iodine, and other means hereafter to be enumerated.

The treatment of chronic rheumatic affections, including gout, requires—more than, perhaps, any other class of morbid actions—the employment of moral as well as medical means. The patient must be encouraged to exertion to prevent immobility; he must be kindly but forcibly impressed with its absolute necessity; he must be told that partial motion is better than immobility, and that it is only by exercise that the synovial fluid expels the secretions which have usurped its habitation. He appeals to our sympathies, and declares that even passive motion is painful; but we must tell him that he has become crippled because his limbs were, from his long confinement, rendered painful upon the first commencement of activity; that “*vires acquirit eundo*” must be his motto if ever he intends to regain healthy power.

In these cases pain does not indicate inflammatory action. It arises from calling into action muscles too long unemployed in their natural function.

There is a marked difference between the sexes in respect to mobility of joints after acute arthritic diseases. Women whose occupations are sedentary, and who are satisfied with the power, however limited, of performing needlework, knitting, &c., rarely attempt to walk; while men, who are fond of out-of-door exercise, recover the use of the lower extremities long before they call any portion of the upper limbs into action.

With the exception, perhaps, of *lepra vulgaris*, we see in these cases the most prominent examples of the symmetry of disease; and it is very wonderful to observe how Nature accommodates herself to the performance of various habitual movements; when the joints of the fingers are so completely subluxated that the phalanges form angles with the palms of the hands, mobility remains.

The object of the practitioner will be to direct the exercise of the joints in such a way as will, with the least amount of pain, restore the healthy action of the affected limbs.

I believe, indeed, that much of this immobility of joints may be prevented by the substitution of a modified active treatment, for the mere palliation of symptoms which usually forms the treatment of the acute stage of gout and rheumatism.

What indications do opiates fulfil? They deaden the more acute sensations, while the morbid con-

dition stealthily proceeds; the minute ramifications of the arteries pour out a diseased secretion, and the fibrous tissues of the joints partake of the inflammatory action; the muscular substance becomes involved, and the tendons contract from long-continued spasmodic action; the liver is locked up; the kidneys are deranged in their secretions; the bowels are constipated, and the sufferings of the patient are increased; the acute stage, as it were, wears itself out, and the patient becomes a cripple.

The adjuvant in these cases is colchicum,—a valuable remedy when properly and carefully administered; but which, from its direct effect upon the nervous system, requires more care and watching than is usually supposed. I have seen many cases in which this medicine has been employed as a domestic remedy in the first accession of an *active* attack of chronic gout. It certainly fulfils its indication, but after a few years it produces nervous tremors and a peculiar sallow state of countenance, with irregular and frequently intermittent pulse.

An acute attack of gout is to be regarded as an effort of nature to produce a disease in an unimportant part of the body, when a vital organ, or class of organs, are functionally deranged. When this is suddenly checked, the functional disease

proceeds unsuspected into an organic lesion ; hence interruptions of the portal circulation overwhelm the heart, and cause it to participate in the constitutional disturbance. Long-continued dyspepsia, with suddenly suppressed or atonic gout, brings with it a train of organic mischief in the liver and kidneys ; while, in not a few, the fibrous membrane of the brain becomes involved, and apoplexy and paralysis are the result. The first effect of colchicum is upon the liver, which it more speedily unloads than any other purgative : as soon as it has done this, its use should be discontinued, it having fulfilled its indication. A longer continuance causes the tongue to become covered with a peculiar creamy coating, indicative of its action upon the mucous membranes, which coating must not be confounded with that which covers the tongue when the bowels are overloaded. In chronic rheumatism, its employment is perfectly unnecessary and useless, excepting when we wish to act upon the liver by a mild mercurial course in combination with it. Irregularity of the biliary secretion is, in most long-continued cases, a concomitant of gout and rheumatism ; in these cases, a pill, containing a grain of the acetic extract of colchicum, with two grains each of blue pill and cathartic extract, will be found to be the best form of alterative aperient, and may be taken every

night for a week. Should a brisk purgative be required, a dose of Mr. Abernethy's mixture, with half a drachm of the vin. colchici, will produce beneficial effects, but must not be repeated at a less interval than a week, because of its powerfully depressing influence upon the pulse and nervous system.

It is too much the custom with those who labour under repeated attacks of mild gout, to fly to colchicum, or some empirical remedy containing it, upon the first appearance of redness and swelling. The gout is certainly relieved, but relief is purchased at the expense of nervous power, which is much debilitated by the action of the remedy. I have always been of opinion, and experience has confirmed my views, that low diet, purgatives, warmth, and confinement to bed for a few days prior to the exhibition of any mere specific treatment, affords greater relief to the system at large and induces a greater immunity from frequent attacks than any other plan. The gouty paroxysm is a relief to a bad and unwholesome state of system, and is attended more or less by a febrile condition. The tongue is loaded with a brownish fur, the interstices of the teeth are filled with earthy concretions, the breath is offensive, and the perspiration, if not altogether suppressed, is changed in its character.

These symptoms, commonly regarded as concomitants of gout, are in reality indications of the state of system which produces the gouty paroxysm. No doubt, a full dose of colchicum, by its energetic action on the liver and intestines, produces a vast amount of immediate relief, but it has no effect whatever upon the causes which lead to it. It suppresses the prominent symptom, it silences the warning, while it produces its debilitating effects upon the system, and leaves the hidden cause of the disease to pursue its course unchecked.

Being myself a sufferer from hereditary gout, I regard a red knuckle as a good sign. I invariably experience relief from it, and am quite sure that I suffered for many years from constitutional debility from having taken large doses of colchicum in my youth for the relief of its paroxysms. Now, my plan is to remain in bed for the day: I eat nothing, and usually take a pill, such as I have just mentioned, once or twice during the week, with manifest advantage.

In chronic rheumatism, gout, and their modifications, we have evidences of constitutional disturbance producing depraved and unhealthy circulating fluid and secretions. The blood becomes loaded with carbon and urea; the bile, perspiration, and urine are altered in their

characters; dyspepsia and its concomitants are prominent symptoms of generally disturbed functional power; depositions result about the teeth, in the muscular and fibrous structures, more particularly of the joints; œdematous swellings take place, from want of tone in the extreme vessels; and the patient is reduced to a condition of general debility, and, from want of nervous energy, sinks into a confirmed cripple.

Gout and rheumatism, however much they may differ, in their causes, localization, and symptoms, during the primary and acute stages, imperceptibly approach each other when they become chronic; in fact, it would, in many cases, be extremely difficult to form a correct diagnosis without the aid of chemistry. Cases which, from the mere inspection of the smaller joints, we should at once pronounce gout, are accompanied by enlargements of the knees and stiffness of the shoulders. On the other hand, we meet with cases in which the disease having, in its outset, attacked the larger joints, has gradually involved the minor ones. A good diagnostic mark is the active attack, which, in gout, commences in the smaller, and in rheumatism, the larger articulations. An attack of gout is a common occurrence in those who have previously had acute rheumatism; an attack of rheumatism not unfrequent

in those subject, or hereditarily predisposed, to gout. It is these complications and substitutions, if I may be allowed the term, of the one disease for the other, that have thrown so much difficulty in the way of a true pathological distinction between two similar diseases.

It is in these cases that the Bath Waters produce a vast amount of benefit. They surpass any other combination of remedial means in the speed with which they restore impaired function to the cutaneous and digestive organs. Their use, however, requires to be very closely watched, to be modified occasionally, and now and then suspended for a short period.

If I were asked to explain their good effects in arthritic diseases, I should give much value to the thermal heat of the waters themselves, which acts soothingly upon the disordered skin by washing off the diseased secretions which invariably attend upon them. A peculiar branny scale or desquamation secreted from the skin itself is a prominent symptom, and the good effects of the thermal treatment commence by its removal.

The second effect is upon the extreme vessels, which absorb into the system the thermal fluid, which is thus directly carried through the system by means of the capillaries.

The third is the production of a general perspiration, which enables the extreme vessels to discharge the diseased cuticular secretion with rapidity: the effect of the thermal bath being tonic, it performs this office with a strengthening and not a debilitating effect.

But, perhaps, the most important of all is, that the bath improves the volume and strength of the arterial pulse, producing increased action without increased inflammation. This results from the fact that its effects are universal, and that it does not excite one organ at the expense of another—that is to say, in all those cases in which there is no internal organic disease.

The above effects arise from the first action of the bath; but in order that we may rightly estimate its value as a remedy to be continued for a certain period of time, it will be necessary to take a cursory view of the solid contents which chemistry has shown to be contained in the springs of Bath.

Their salts are those which are most grateful to the system, because they supply many of the ingredients which the blood requires for its restoration to perfect health, and their introduction into the system by means of the vessels of the cutaneous surface, enables them to be distributed throughout the circulating system, and to become

eliminated therefrom in improved secretions from the liver, skin, and kidneys ; all which organs are altered in their secreting function by diseased action, and the altered constitution of the circulating fluid.

But there are three other ingredients in these waters which claim a large share of their merits—the free carbonic acid, the proto-carbonate of iron, and lithia.

- The free carbonic acid gives to these springs their peculiar balmy feeling, and by its gentle stimulus to the surface, brings into action the vessels more immediately concerned in the disease ; and being applied in combination with the salts referred to above, it changes the acid and unhealthy character of the cutaneous secretions into healthy perspiration.

The proto-carbonate of iron, although so small in quantity in reference to the bulk of the water, supposing but a quart or gallon is subjected to analysis, exists in large proportion in the bath itself, when we consider that thirteen hogsheads are required to fill a bath for one person—a point which, I think, has been much overlooked by those who have decried the merits of the Bath Waters externally administered, in consequence of the minuteness of the quantity of the chalybeate detected in a portion of the waters, necessarily

small for the purposes of analysis. We have not to enquire what may be the quantity contained in a gallon of the Waters, but to take into consideration the effects of a thermal chalybeate bath, containing many hogsheads of the mineral waters.

In reference to the endermic exhibition of iron, the city of Bath affords the only instance in this kingdom where this valuable mineral may be applied through thermal agency. The baths of this city have been celebrated for countless ages for their peculiar virtues in arthritic diseases, so that panegyric is not required to bring them into notice, as in the instance of a newly-discovered spring.

As I have already pointed out the peculiar effects of the Bath Waters internally administered, I need not dwell upon their internal use in the diseases now under consideration ; suffice it to say that in all cases of gout and rheumatism, where their external exhibition is productive of benefit, their internal effects will contribute materially to the advantages derived from the thermal treatment. Care, must, however, be taken lest we over-stimulate, in which case we shall have to suspend our treatment and re-commence that which is applicable to the acute and active stages of these diseases.

The Bath Waters, indeed, seem to be imbued with just that proportion of iron which may be taken up and conveyed usefully into the system ; at the same time that they increase the number of the red corpuscles of the blood, they alter the circulating fluid from a carbonized sizzly state, presenting a small amount of coagulum and fibrin in what Dr. Cheyne called an "ocean of serum," into a florid healthy condition.

"That there must be," says he, "a larger proportion of steel in the Bath Waters than is manifested to the senses, or discovered by any experiment hitherto made, is evident from their healing effects, which no known medicine but steel can bring about, or account for ; none but those who have seen it can believe the wonderful efficacy it has in most chronical cases. What but steel in a few weeks can make the blood from a white, bluish, or tallow hue, resisting the knife like glue, swimming in its serum like an island amidst the ocean, look all of a piece of a scarlet color, and a due proportion between its nourishing and watery parts ? Nothing but steel can make a pale ash-colored countenance, hollow and deep eyes, no appetite, little strength, and less sleep ; eat and drink, and sleep, look gay and sleek, like the best health. Thousands of such instances

may be seen every season at these healthful springs." *

My own experience justifies me in producing the testimony of one of my most distinguished predecessors, to bear witness to the fact that the Bath Waters do, in cases of gout and rheumatism, produce an organic change in the elements of the blood, and that it is to this property we are to attribute their value in the relief of diseases characterized by depraved secretions.

"Iron," says Dr. Edwin Lee, "the predominance of which in mineral springs constitutes an important class, is an essential component of the animal economy. It is found in the chyle, lymph, and blood, in the muscles and bones, in the secretions, including milk. The quantity of iron which exists in the blood bears an exact proportion to its red globules; by the abstraction of blood, the quantity of fibrin is diminished; by the exhibition of this metal, the quantity of fibrin is increased, and the blood assumes a bright red colour. It has, however, been demonstrated by experiments on rabbits, that iron can only be absorbed into the blood in a limited quantity,

* An Essay of the True Nature and Due Method of Treating the Gout, together with an Account of the Nature and Quality of the Bath Waters, the Manner of Using them, and the Diseases in which they are proper. By George Cheyne, M.D., F.R.S., London, 1720.

whatever the amount given, the remainder passing off by the bowels." *

I have made repeated observations upon the quantities of iron necessary for the production of its constitutional effects, and can truly affirm that the Bath Waters produce all the benefits expected from chalybeate treatment; and although their use may be continued for a long period both externally and internally, they do not discolour the alvine excretions like the ordinary preparations of the metal,—a sure proof that Nature takes up the whole of the iron contained in the waters and transfers it directly to the circulation.

That Dr. Cheyne's opinion that the waters contain a larger portion of iron than is manifest to the senses, or discovered by experiment, is correct, the following experiments will prove :—If you fill a large bath in a close room and pass through it, the taste of iron is quite perceptible in the respired steam; and if a cloth be steeped in tincture of galls, dried and placed in the bath, it will not discolour, but if it be suspended immediately over the water, it speedily becomes black, owing to the peroxidation of the diffused molecules; thus we draw the inference that,

* Practical Observations on Mineral Waters and Baths, with Notices of some Continental Climates. By Edwin Lee, M.D.

during the bath, the lungs inhale the ferruginous particles.

The mode of employing the thermal treatment will depend upon the circumstances of the individual case. The period, also, during which it is to be persevered in, can only be regulated by the practitioner in attendance. Thus, in some cases, bathing only will be prescribed; in others, the douche will be alternated with the bath; in some, drinking will accompany the endermic employment; and in others, certain adjuvants, both externally and internally, may be used.

I have seen so many hundreds of instances, even in severe cases, where the Bath Waters of themselves have produced so much benefit, that I should feel disposed, in all ordinary uncomplicated cases to accord to them a full trial. It, however, sometimes becomes our duty, when mobility of joints is in danger of becoming altogether impeded, to employ the resources of the medical art in the same way as we should do were we at a distance from the springs, in order that our patients may derive the benefits of all the means which experience justifies us in using.

The drinking of the Bath Waters in simple cases, with a mild aperient pill occasionally administered, will fulfil all the indications we desire, when accompanied by a steady course of

bathing. We, however, occasionally see cases in which severe erratic pains occur at night, preventing the sleep of the patient, in which the iodide or bromide of potassium, in combination with bathing, affords great relief. These cases present no swelling: occasionally they attack the bones and nerves, and, in many, seem to be rheumatism of the vascular apparatus. In these cases a course either of these remedies or of the Bath Waters, separately employed, fails to cure, when their combination speedily restores to health.

The endermic application of a saturated tincture of iodine is of the utmost value in combination with the bath for the reduction of enlarged joints. This tincture should be applied in the morning of the day succeeding the bath, not on the day in which the bath is employed. The benefits derivable from this plan are very great, and tumefied joints are speedily reduced in size by their united agency.

The galvanic bath, with the application of electro-magnetism on the alternate days, has, in many cases, been a most useful adjuvant; and I have seen great power imparted to almost motionless limbs by its careful employment.

In concluding this chapter, I may observe that the Bath Waters fulfil all our indications. It is

desirable that they should be employed as early after the acute stage as possible, because when immobility of joints has been allowed to continue for any length of time, the case admits but of partial relief: but in all cases that I have seen, in which no organic mischief was present, although, from the severity and long continuance of the disease, the patient derived but little advantage from their use, as far as the special complaint was concerned, I never knew a single instance in which the general health was not improved in every respect; and many patients have written me to say that they enjoyed better health, and greater immunity from active attacks,—the result of the thermal treatment,—than they could possibly have anticipated prior to their employment.

In all cases where the heart has not been involved, and where no metastasis has occurred, the patient being in good general health, a trial of the Bath Waters should be recommended before the disease assumes a form which renders the implicated joints incapable of motion.

CHAPTER XI.

Cerebral and Spinal Palsies.

HEMIPLEGIA.

I have now to point out the benefits derivable from the thermal treatment in paralysis dependent upon organic lesions of the brain and spinal marrow, in which the loss of nervous and muscular power is more or less complete.

There are varieties of hemiplegia. In some there is loss of voluntary motion and sensation; in others sensation remains perfect; in some there is undue sensibility with extreme pain, without perfect voluntary motion; while in others, such as those in which the lesion has been a cortical one affecting the ascending parietal and adjacent motor convolutions, and followed by secondary sclerosis of the motor tracts, we have contractions of the fingers upon the palm—spasmodic if the lesion is only irritative and temporary, permanent if it is destructive. Such cases as these are obviously not likely to be much benefited

by the thermal treatment, which, indeed, if irritation is still present, may do positive harm. In the later stages of such palsies, however, when the rigidity has for some time been permanent and there are no symptoms of vascular excitement, great improvement in the general health might follow a judicious course of the Waters.

Besides the other differential symptoms, cerebral and spinal palsies can often be distinguished from those due to local causes and mineral poisons by the flaccidity which attends upon the latter variety.

In hemiplegia, too, there is a great distinction to be drawn at the outset of the case. It may depend upon excitement and plethora, when venesection and antiphlogistics are absolutely necessary, or upon diminished arterial action, when stimulants are required. It mostly occurs as the sequela of an apoplectic fit, but not unfrequently, is gradual in its approach, several days elapsing before complete loss of power occurs, so that it is necessary to be very careful in our diagnosis before we adopt any active measures. Upon our judgment alone the safety of the patient rests, and before we proceed to deplete, it is necessary to enquire into the circumstances preceding the attack.

The practitioner is sent for in a hurry to a patient in an apoplectic fit. He knows that opposite causes produce similar effects,—that debility or excitement in persons predisposed to apoplexy will both produce hemiplegia. Secondary apoplexy, or that which occurs subsequently to the accession of hemiplegia, may in some rare cases require bleeding; in others it is necessary to employ stimulants and sinapisms; yet in both, insensibility is perfect, and the only indication for the guidance of treatment is the state of the pulse and breathing.

Hysteria will frequently simulate hemiplegia, in which case we have nothing to guide us but the previous history of the patient; and here the converging of the pupils of the eyes towards the nose will afford a good diagnostic mark as to the nature of the fit.

Chorea in young women not unfrequently produces partial hemiplegia. Of this I have seen two remarkable cases: in both, the left arm and hand were affected; in both, I observed involuntary twitchings of the sound hand, for when I directed any attempt at motion of the palsied member, the right hand seemed, unconsciously to the patient, to be endeavouring to assist it; and though both patients had been previously treated for a cerebral affection, I was enabled, by this one diagnostic

mark, to pronounce upon the true nature of the case, and both perfectly recovered by the thermal treatment.

Tight lacing is a not uncommon cause of hemiplegia in young women. Of this I have seen several cases, two of which were fatal.

But I am forgetting my subject, which is, how far are the Bath Waters useful in cases of hemiplegia? I must candidly acknowledge that, as far as the special complaint is concerned, where loss of power has gone to a great extent, where the arm and leg remain below the natural temperature, where the hand remains clenched upon the palm,* and the foot dragging along the ground, moves forward solely by the strength of the sound limb, the arm having recovered much power, while the lower extremity remains useless, the intellect at the same time being blunted, memory deficient, articulation and deglutition difficult—but little or no benefit accrues; at the same time it must be admitted that a carefully conducted course of the Waters will materially benefit the general health, restore the appetite, and improve the secretions, and do all that can be expected from any plan of treatment, namely, render life more

* Professor Trousseau, in his Clinical Lectures, lays much stress on the complete incurability where this symptom exists.

tolerable, and afford the satisfaction to the poor afflicted invalid that every means has been employed for his relief. These are melancholy cases: patients hearing of the great success of these Waters in the cure and relief of paralytic cases, do not enquire whether their particular disorder comes within the category of cases relievable, but come to Bath buoyed up with the hope of a cure, and returning home disappointed, bring discredit upon the waters to those whose cases are especially applicable. It is this that has caused me in this treatise to separate as far as possible diseases which, under the name of palsies, have been confounded together, although differing greatly in their causes and progress; and equally so in their applicability for the Bath thermal treatment.

The cases of hemiplegia relievable by the Bath Waters are those in which the disease has been gradual in its accession and progress—those, in fact, which are not immediately preceded by a distinct apoplectic seizure. In these cases we see a gradual loss of power taking place, and then a gradual attempt at recovery; the lower extremity entirely recovers, while the upper gradually improves. In these cases the thermal treatment, carefully conducted, produces very beneficial effects, and gradually but surely effects a great

improvement,—not only in the general health, but also in the power over the limbs.

The state of the patient's general health will afford us a guide in our selection of cases for the thermal treatment. I am most desirous that it should be fully understood that I have endeavoured to speak of the waters as an article of the *Materia Medica*, only to be employed in cases where they are indicated, and where their use fulfils some object necessary for the patient's relief. In fine, where the circulation is steady and regular—below the natural standard—where the brain betrays no symptom of undue excitement—where the digestive organs are sluggish, and assimilation badly performed from functional derangement—where partial immobility still exists, although motion is observed progressively to improve, and the patient requires change of air and scene,—the thermal springs of Bath, judiciously superintended, will supply a means of relief which it is the practitioner's duty to advise, and which may produce incalculable benefit.

In these diseases we have to consider two effects: first, loss of general health; and, secondly, loss of power. The latter is more or less complete, and the health is more or less affected. The Bath Waters possess great power in strengthening the system, and by this means afford all the relief they

are capable of to the special disease. Unfortunately, these cases do not resort to the springs until immobility, whether complete or partial, is firmly established. What, then, is to be done? The state of the general health is our first object, and we direct all our remedial means to its re-establishment, hoping that the limbs may recover their power as the general health improves.

It will be seen from these observations that the stimulating effects of a thermal chalybeate spring require to be closely watched, lest cerebral excitement should be re-induced by their employment. Thus the practitioner will be cautious in his employment of the baths, and trust more to the internal exhibition of the waters, with the douche bath once or twice a week to the palsied side.

Sometimes the waters accelerate the circulation, and symptoms of cerebral excitement come on. In these cases the application of a blister to the neck, or sinapisms on alternate days, afford speedy relief; and where our object is to relieve the brain without great loss of blood, leeches, varying in number according to the exigencies of the case, may be applied behind the ears, the relief produced by them being very great and immediate.

Should this acceleration of circulation and undue excitement of brain continue, it is better

to suspend altogether the thermal treatment than to hold out hopes of improvement which may never be realized.

The adjuvant remedies in these cases are few. Friction with passive motion of the upper extremity, walking exercise where it can be indulged in, and the application of the galvanic hand-bath of a moderate degree of power, are the most likely to be useful.

The Bath Waters alone act better than when they are combined with other treatment, and it is but justice to our patients to give them a fair trial in all cases where their use is not contra-indicated.

PARAPLEGIA.

It must be observed that idiopathic paraplegia is of comparatively rare occurrence, excepting in those cases which we can clearly refer to the direct application of cold to the extremities of the nerves of the feet, and to those which have a reflex origin. The former of these have been already described in Chapter VI. ; they are referred to here merely to point out the value of a correct diagnosis as a guide to practice in cases of slow progress from perfect motion to complete loss of power.

True paraplegia presents the following marks by which it may be distinguished from all other

diseases: loss of voluntary muscular power, with severe spasmodic twitchings of the limbs, usually both at the same time; loss of control over the sphincter muscles, with *priapismus sine cupidine*; the pulse, also, is very peculiar, it is thready, jerking, sometimes irregular, and at others intermittent; and the pupils of the eyes are contracted.

These symptoms indicate spinal lesion, either the result of irritation and inflammation, or of direct violence to the spine itself.

It were well if the results of the ordinary modes of treatment were collected together, in order that we might compare them. My own experience of chronic cases convinces me that the usual modes of treatment fail altogether. I am very much inclined to the belief that they are too violent, too heroic, and that inflammatory conditions of the spinal cord and its membranes should be treated upon general rather than upon specific principles. I am perfectly satisfied, from an inspection of numerous relations of cases which intelligent patients have written for me, that moxas, issues, and setons, although it must be admitted that these means are much less often employed than they formerly were, rarely, if ever, produce any benefit, and that the mercurial treatment, except in some of those cases where the

paraplegia has been due to a gummatous deposit, and where for some reason iodide of potassium cannot be borne, adds to, rather than diminishes, the paralytic condition.

These are decidedly the most melancholy cases sent to Bath; the patient, with his intelligence perfect, remains for life a burden upon his attendants, the relaxation of the sphincters renders the case peculiarly troublesome and offensive, and the thermal treatment rarely produces benefit.

Far be it from me to say that the waters do not produce great benefit and frequently a cure in cases of paraplegia, such as I have enumerated under the head of local and mineral palsies; the difficulty is to diagnosticate between the two affections.

Where paraplegia occurs in women, we frequently find it to depend upon hysteria, and before we proceed with active depletory treatment, it were well to ascertain whether it depends upon structural lesion of the cord and its membranes, or upon functional derangement of the uterine system.

CHAPTER XII.

Diseases in which the Bath Waters are occasionally beneficial when other means have failed.

PROGRESSIVE LOCO MOTOR ATAXY.

THIS disordered condition, for the knowledge of whose diagnostic character the profession is indebted to the researches of Dr. Duchenne (de Boulogne), is one in which the Bath Waters prove decidedly beneficial. It is more than likely also that they will prove to be equally advantageous in the allied disorders, Disseminated Cerebral, and Cerebro-spinal, Sclerosis.

DIABETES.

During my seven years' residence at the Hospital, I saw six cases of this formidable disease subjected to the thermal treatment; the results were, that one was cured, two greatly relieved, and three derived no benefit whatever.

MARASMUS.

There can be no doubt that the internal exhibition of the Bath Waters produces decided

benefit in children labouring under chronic diseases of the mesenteric glands, and other symptoms of strumous diathesis: where there is a general cachectic appearance, loss of appetite, and imperfect assimilation and digestion. Indeed, in these cases they fulfil all the indications expected from tonics, and combine at the same time an alterative plan of treatment, a rose douche being applied to the spine twice a week, and a small glass of the waters exhibited twice a day for the period of a month or six weeks, according to the exigencies of the case. In these cases the aërated Bath Waters form a good substitute for a visit to Bath.

CRITICAL PERIODS.

The Bath Waters at the source, or drank at a distance in the aërated state are extremely useful at both periods of uterine life. Immediately prior to the establishment of the periodic secretion, they invigorate the system and cause it to be more prepared for the coming change in delicate young women; by altering the character and consistence of the circulating fluid, improving the general tone of the whole nervous system, and increasing the appetite, they convert the pallid hue of weakness into the fresh colour of health, and frequently prevent debility from terminating in consumption.

At the advanced period, they enable the system to throw off the tendency to disordered function in the various organs, which not unfrequently attends upon the cessation of the catamenia, and by invigorating the general health, enable it to combat the disposition to disease.

CHAPTER XIII.

Thermo-Galvanism; or, Galvanism when used in conjunction with the Bath Waters.

I have had frequent occasion, in the foregoing pages, to speak of the benefits derived from a combination of galvanism with the thermal treatment, more particularly in local and mineral palsies, and some cases of rheumatism.

I have seen many cases of palsy in which galvanism alone, and the Bath Waters alone, have been employed without much apparent benefit; but these cases have rapidly recovered when both agents have been employed together. In fact, every case in which electricity is likely to be beneficial, is one which will improve under a concurrent course of the Bath Waters.

My attention was directed to this plan by the late Mr. Tylee, medical electrician, of this city, who has written a work upon the subject.*

* Practical Observations on Galvanism, Electricity, and Electro-Magnetism, as Employed in the Cure of Disease, with Remarks on the Advantages of their Application through the Medium of Baths, containing full Directions relative to the Choice and Management of Apparatus. By John Palmer Tylee.

Many of the cases treated by him I have either seen or attended during the period of the thermogalvanic treatment. Upon his plan, the bath is made to form a portion of the electrical circuit; the patient being placed therein, a copper wire brush, connected with the positive pole of the battery, is approximated by an attendant to the parts affected, and the intensity of the current is regulated by the proximity of the brush.

“There is no place in the universe,” says Mr. Tylee, “so well adapted for the advantageous administration of galvanism as Bath. The curative properties of our waters have been celebrated from time immemorial; the astonishing and unvarying supply of the springs—the elegance and convenience of the baths, fitted with every accommodation that the most fastidious can require—render them superior to any others in the world. And the novel method I have adopted of passing the current through the warm baths, must, I think, give the preference to the water medium for its application, and for the following especial reasons:—First, because it differs from the usual mode, in not producing violent and oft-repeated shocks. In the water its flow is continuous, and is a current rather than a shock. While the dry electro-galvanism influences more particularly the courses of the principal nerves and their primary branches,

the water medium enables us to apply this powerful agent to the more sentient extremities, so that the minutest fibres of a muscle or set of muscles are brought into a *pleasurable* action rather than a spasmodic one. By means of a portable disc, we are enabled to produce this effect at will, to regulate the intensity of the current, and by its modification to apply it to any distinct set of muscles, without implicating those which are unaffected by disease, which is not the case with dry electro-magnetism. I conceive its application to be most useful in the various cases in which the lumbar muscles, or those of an entire limb, are deficient in nervous power or energy. It must be remembered that natural and artificial warm baths are means of cure in almost every case in which the application of electro-galvanism is required, so that by its combination with the warm bath, we are using two agents in a useful and not unpleasant manner."

The advantages derivable from this plan of treatment I have repeatedly seen. They are obvious when we consider that, in the water medium, the electric current is diffused over a larger portion of surface—that a succession of severe shocks is not produced—that a larger number of minute nerves are called into action without painful feelings—and that we are enabled

to transfer the current to every portion of the body at will. Thus we can produce all the good effects of galvanism in a warm and invigorating medium, itself one of the means of cure ; and the poor suffering paralytic, who is ordered to have his spine galvanized, is not compelled to sit shivering half naked in a chair, but getting into the thermal water, he enjoys the grateful feeling of the bath with the agreeable return of sensation in the affected limbs, produced by a duly regulated electro-magnetic current. He enters the bath dispirited with his helpless condition, he leaves it with renewed feelings of vigour : a perspiration which invigorates, rather than reduces, breaks out upon his brow, his appetite becomes keen, his strength improves, and he gradually throws off the debilitating disease.

I am not speaking from theory, such as induced Mr. Tylee to believe that this combination of powerful remedies would be efficacious in the removal of severe functional disease, but, judging from facts which daily fell under my notice, I have no hesitation in saying, that I have seen surprising cures effected by thermo-galvanism in diseases attended by loss of muscular power without cerebral mischief—in other words, where loss of power depends upon depressed nervous energy, and not upon arterial excitement acting upon the

nervous centres, or upon venous congestion. In the cases which I submitted to the thermo-galvanic treatment, I usually directed Mr. Tylee to apply the galvanic bath three times a week, and on the alternate days the electro-magnetic battery, either dry or by the immersion of the affected limbs in a zinc pail or pot connected with the negative pole of the battery. By the ordinary mode of proceeding, patients are directed to grasp the brass handles of the wires attached to the opposite poles, by which means the flexor muscles are called into violent spasmodic action, whereas, in the majority of cases, the loss of power is greater in the extensors.

It should be remarked that no current that has been employed has decomposed the Bath Waters. They retain their integrity throughout the operation.

TABLE OF THE MODERN QUANTITATIVE ANALYSES OF THE BATH WATERS,
KING'S BATH SPRING—TEMPERATURE, 115°, SPECIFIC GRAVITY, 1·0025.

INGREDIENTS IN THE IMPERIAL GALLON.	PHILLIPS. 1806.	SCUDAMORE 1820.	WALCKER. 1829.	HERAPATH. 1836.	NOAD. 1844.	MERCK AND GALLOWAY. 1848.
Carbonate of Lime	7·680	5·280	10·667	8·122	...	8·820
Carbonate of Magnesia .....	...	...	...	trace.	...	0·329
Carbonate of Soda .....	...	...	...	...	5·760	...
Carbonate of Oxide of Iron ..	0·274	0·200	0·243	0·240	0·521	1·071
Sulphate of Lime	86·400	98·320	81·624	90·480	96·240	80·052
Sulphate of Potassa .....	...	...	2·927	...	...	4·641
Sulphate of Soda	14·400	1·520	19·371	10·672	...	19·229
Sulphate of Magnesia .....	...	...	...	7·456	...	...
Chloride of Sodium	31·680	12·240	15·122	16·848	27·456	12·642
Chloride of Magnesium .....	...	15·360	13·339	5·976	7·142	14·581
Alumina .....	...	...	·150	...	...	...
Silicic Acid	1·960	1·920	3·233	1·760	3·360	2·982
	142·394	134·840	146·676	141·584	140·479	144·018
Carbonic Acid in cubic inches.	11·52	...	7·60	26·45

ANALYSIS OF THE BATH MINERAL WATERS, FEBRUARY, 1874.

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Constituent Parts.	KING'S BATHS.		HETLING PUMP.		CROSS BATHS.	
	Parts per Million.	Grains per Gallon.	Parts per Million.	Grains per Gallon.	Parts per Million.	Grains per Gallon.
Calcium	377	26·39	401	28·07	388	27·16
Magnesium	47·4	3·31	52·2	3·65	46·8	3·27
Potassium	39·5	2·76	31	2·17	37·5	2·62
Sodium	129	9·03	137	9·59	140	9·80
Lithium	Traces.	Traces.	Traces.	Traces.	Traces.	Traces.
Iron	6·1	·427	6·7	·469	4·5	·315
Sulphuric Acid	869	60·83	884	61·88	895	62·65
Carbonic Acid } (combined) }	86	6·02	89	6·23	83·5	5·84
Chlorine	280	19·60	275	19·25	280	19·60
Silica.....	30	2·10	36	2·52	38	2·66
Strontium	Traces.	Traces.	Traces.	Traces.	Traces.	Traces.
Alkaline Sulphides ...	Traces.	Traces.	Traces.	Traces.	Traces.	Traces.
Carbonic Acid Gas at } normal temperature } and pressure..... }	Cubic centimetres. 62·5	Cubic inches. 18·2	Cubic centimetres. 80·4	Cubic inches. 23·4	Cubic centimetres. 51·5	Cubic inches. 14·9
Solid Residue	1920	134·4	1950	136·5	1970	137·9
Temperature at Source where } Water was taken. }	41 $\frac{3}{4}$ Centg. -106 $\frac{1}{2}$ ° Fahr.	46 Centg. -115° Fahr.	41 Centg. -105 $\frac{1}{2}$ ° Fahr.	41 Centg. -105 $\frac{1}{2}$ ° Fahr.	41 Centg. -105 $\frac{1}{2}$ ° Fahr.	41 Centg. -105 $\frac{1}{2}$ ° Fahr.
Specific Gravity	1·0015	1·0020	1·0020	1·0020	1·0020	1·0020

The above Analysis is from a paper read before the Bath Antiquarian Society and Field Club by—
MACKAY HERIOT, (Captain Royal Marine Light Infantry.)

APPENDIX.

Microscopic Examination of the Sediment from the King's Bath, by the late Professor Quekett, F.R.C.S.

"I found the sides of the bath covered with an ochreous or rust-like sediment, and a large quantity of fine sand was brought up by the water and deposited in a reservoir, into which the springs open, about four feet below the surface. In a specimen, I noticed fragments of wood, seeds, nutshells, and minute portions of charcoal. Some of the shells were covered with a well-marked coating of iron pyrites, whilst many pieces of the wood appeared to be pyritic throughout; others were quite black and firm like bog oak; a few fragments were as black and as brittle as charcoal. I submitted samples of the water, sediment, and sand to a microscopic examination, with the following results:—The water contained no trace of animal or vegetable life, but in the ochreous sediment I recognized specimens of a recent *navicula*; the sediment itself consisted principally of granules of two kinds, one very minute, of a brown colour, formed the greater portion, the other was larger and more transparent, evidently siliceous, probably arising from minute particles of sand suspended in the water. The sand consisted of nearly equal sized grains of very transparent siliceous, mixed with vegetable remains, easily recognized by their black colour, and of a few rather larger grains which were semi-opaque; when acted on by boiling nitric acid, a copious effervescence took place, the semi-opaque grains, most probably calcareous, disappeared,

leaving the silex unaltered; by continuous boiling the woody matter was also destroyed, leaving a sand remarkable for its transparency and brilliancy. Many of the vegetable fragments were more than half an inch square, and those most free from pyrites exhibited their structure well; I was enabled by section to recognize the oak and hazel; the presence of the latter was to be expected, as portions of nutshells were not only numerous, but the best to exhibit structure; most of these fragments abounded in pyrites, and an inky taste was very perceptible when they were applied to the tongue. The seeds were not numerous, but were coated with pyrites, looking as if they were bronzed; they were of two kinds, one smooth like a grain of wheat, the other streaked like the carraway; when I inspected the sand and vegetable remains, I was reminded of what I had seen in the peat bogs in another part of Somerset, and I hazard the opinion, that the water in its course passes through a stratum of peat, that from it the sand and some of the vegetable remains are derived, and that a portion of the heat of the water might be due to the action of that agent upon pyrites."

Aeration of the Bath Mineral Waters.

THE great medicinal qualities contained in the Bath Mineral Water have for some considerable time attracted the attention of a Bath Citizen, who has given the subject much care and patient attention, with a view to its extended use. The large number of Aërated Mineral Waters which are constantly emanating from Foreign Spas has probably given rise to the idea of Aërating the Bath Mineral Waters. For some years an effort has been made to obtain a lease for the sole right of bottling the Waters in their proposed new form, but until quite recently the Corporation of the City were

not in a position to grant this, from the fact that the Kingston Spring did not belong to them, they having only lately purchased it from the estate of the late Earl Manvers.

A lease has now been obtained, suitable premises have been found underneath the Grand Pump Room, and busy hands are now engaged in rendering them fit for carrying out this very important undertaking. The Water will be obtained direct from the Spring that supplies the Grand Pump Room, and simply be charged with Carbonic Acid Gas. Various experiments of a scientific character have already been made, and from the opinion of a very large number of the medical profession, it is confidently expected that the new and desirable condition under which the Bath Mineral Waters will be drank, will tend very considerably to augment their use. Great opportunities were offered during the visit of the British Medical Association to Bath in 1878, to obtain opinions from very high authorities, and it can be truthfully affirmed that in no instance was an unfavorable one expressed, on the other hand numerous were the praises of the Waters in their new form by the Members of that very important Society.

An analysis has already been obtained, which very materially strengthens the views already expressed, inasmuch as the Constituents of the Water undergo *no change*; the following is a copy:—

The City Analytical Laboratory,
Broad Street, Bath.

Having examined the samples of Natural Bath Mineral Water and of the same Water charged by you with Carbonic Acid Gas, I find them to contain identically the same amount of Solid Matter, namely, 168 grains per gallon.

Signed, J. W. GATEHOUSE, F.I.C.

To Mr. R. B. CATER.

The Bath Mineral Water Hospital.

THIS National Charity is a Corporation founded by Act of Parliament in 1739, managed by a President and Governors, the Medical Staff consisting of Three Physicians, three Surgeons, and a Resident Medical Officer. It was opened in 1742. "It is a peculiar feature of this Charity that no interest is required to gain admittance to its advantages—no recommendation of Subscribers, Governor, or any other person. All that is required to procure a patient's admission is, that the party be in such condition of life, that the expenses attendant upon a long residence in Bath would be more than could be afforded; and that the waters are applicable to the patient's case. They are supplied with medical attendance, medicine, washing, food, and nursing."

Baths are constructed within the Hospital, and the Bath Waters are introduced, so that the patients are enabled to bathe almost at their bedsides—an arrangement which greatly conduces to their cure. The report of 1864 states that—"Within the last few years a most important improvement has been effected, by the erection of an additional Building, equal in extent to the original Hospital, and connected with it by Corridors. The new Building contains spacious Day Rooms for the patients of both sexes, a commodious and beautiful Chapel, Board Room, Dispensary, and all the apartments of the Officers—and in its rear is an airy Exercising Ground. By this new arrangement of the offices, the whole of the space they formerly occupied in the Old Building has been given up for increasing and greatly improving the Night Wards of the patients. The erection of the New Building (including the cost of its site), and the improvements effected in the Old Building, have involved an outlay of £20,468—towards which £2,500 were supplied from a fund

at the disposal of the Governors, and £9,012 by the Public, in answer to appeals. The remainder, £8,956, has been paid from the capital of the Institution. As the annual expenditure will necessarily be considerably increased, the Governors are anxious that this sum should be replaced as early as possible, so that the income arising from Investments may not be lessened. They, therefore, earnestly appeal to the benevolent and wealthy on behalf of this noble and increasingly useful Institution, whose benefits are so liberally diffused throughout the whole kingdom, and which depends for nearly half its income on Voluntary Contributions."

Out of 52,513 patients discharged since the Hospital was opened in May, 1742, to April 30th, 1879, 42,534 have been relieved, including 14,701 cures.

Those sick persons only are admitted whose diseases are capable of being benefited by the Bath Waters, and which comprise palsy, gout, rheumatism; certain nervous derangements, among which St. Vitus's dance may be particularly noticed; leprosy, and other chronic diseases of the skin; dropped hands from lead, poisonous effects of mercury and other minerals; pain, weakness, or contraction of limbs; dyspeptic complaints, biliary and visceral obstructions, &c. But when these complaints are accompanied with pain in the chest, cough, or spitting of blood; palpitation or other disorders of the heart; determination of blood to the head; acute inflammation, or general fever; abscess, suppuration of joints, or ulcer of any kind; or if epileptic fits have occurred; the Waters are not applicable. And in cases of apoplectic palsy, it is deemed necessary that six months shall elapse after the attack before the patients are admissible.

The eligibility of each case can be ascertained only by a report, to enable the medical staff to determine how far the patient is likely to derive benefit by the use of the Bath Waters; the report of each case must contain—

1. The name, age, and parish of the applicant.

2. A brief history of the disease, comprising its origin, date, progress, and present symptoms, mentioning the parts principally affected, and to what extent.

3. A correct representation of the state of general health, particularly certifying the absence of all disorders which render the Bath Waters inapplicable, as above enumerated.

A blank form for making the report may be obtained from the Registrar, and should be forwarded to the Registrar, by a medical man acquainted with the case.

Accuracy of reports is important; for when, from defective or erroneous statements, improper cases are admitted, they are immediately discharged, to the great inconvenience of patients; and frequently with considerable expense.

In a few days the result of the application will be given to the party applying. If admitted, the letter will be accompanied by a blank certificate, relating to the parish settlement and poverty of the patient; but the patient is enjoined to remain at home until notice of a vacancy is received.

On receipt of the notice of vacancy, the patient should proceed to the Hospital, bringing the letters of notice, and the certificate duly executed, as well as the caution-money, which is three pounds for patients coming from any part of England or Wales, and five pounds for those from Scotland or Ireland.

The object of the caution-money is to supply the means of sending patients home, when discharged; or to defray the costs of interment, in the event of death. When not required for these purposes, or for supplies of necessary clothing, the whole of it is returned to the parties providing it.

Soldiers may, instead of parish certificates, bring certificates from the officers commanding their corps, acknowledging them to belong to such corps, and agreeing to receive them back when discharged. The same regulation applies to pensioners of Chelsea and Greenwich. With respect to all these, however, reports and caution-money are required.

The Governors wish to impress on Boards of Guardians, that as this Hospital admits patients from all parts of the kingdom, and is continually the means of relieving parishes in the maintenance of sick paupers, it has a claim (sanctioned by Act of Parliament) to subscriptions. Those who have the management of parochial affairs will, therefore, it is hoped, see the propriety of contributing somewhat to its support, and thus assist in enabling it to continue the widely-extended relief which it has afforded to the suffering poor of the kingdom for upwards of a century.

The following statement shows the extent of the operation of the Charity :—

Counties of England and Wales from which Patients have been received during one Year.

Somerset	...	...	218	Herts	...	...	6
Wilts	...	...	95	Worcester	...	...	6
Gloucester	...	...	95	Bucks	...	...	6
Middlesex	...	...	72	Warwick	...	...	6
Dorset	...	...	50	Cornwall	...	...	5
Surrey	...	...	43	Stafford	...	...	3
Devon	...	...	32	Essex	...	...	2
Hants	...	...	27	Derby	...	...	2
Berks	...	...	25	York	...	...	2
Monmouth	...	...	19	Brecon	...	...	2
Glamorgan	...	...	13	And one each from	9		
Hereford	...	...	13	other Counties	...	9	
Sussex	...	...	9				
Oxford	...	...	8				
Kent	...	...	8				
							<hr/> 776

Bellott's Hospital.

THIS Hospital was founded in the reign of King James the First, for "the relief, lodging, and harbouring of poor men, being diseased (but not infected with any contagious disease), who should resort to Bath, for the benefit of the Waters." It is now under the guidance of the Trustees of the Municipal Charities, and is open throughout the year for persons of both sexes. It has 11 separate rooms, and no person is allowed to remain more than 4 weeks in any one year unless (upon the certificate of the medical officer that a longer residence would be beneficial to the patient), the Trustees should see fit to grant an extension of the time. Four-pence a day is allowed to each patient during the time he or she remains in the Hospital.

Applications for admission must be addressed to the Secretary, E. T. Payne, Esq., 5, Old King Street, Bath, accompanied by a certificate, similar to the one required at the Bath Mineral Water Hospital. The caution-money required to be deposited is One Pound.

The Baths of Bath.



THE CORPORATION OF BATH is anxious to draw attention to the Hygienic value of these Springs, and to the luxurious accommodation provided. The Waters are peculiarly beneficial in cases of Rheumatism, Sciatica, Gout, Paralysis, Nervous Debility, Chronic Diseases of the Skin, and many other affections. Bath is one of the handsomest and best built cities in the kingdom, well sewered, and amply supplied with pure water. The beauties of the surrounding country, the pleasant society, and the numerous amusements and attractions, are additions to the healing properties of its celebrated Mineral Springs. Bath is only two hours and a quarter distant from London, and has first-class Hotel accommodation in connection with the Baths, as well as many other superior Hotels in various parts of the City. The whole of the Mineral Springs are vested in the Corporation, who have spent large sums of money in making the different Bathing Establishments as perfect as possible, and it is acknowledged by persons who are well acquainted with the various Watering Places in this Country, as well as on the Continent, that the New Royal Baths, which were erected a few years since, stand unrivalled for their comfort and general arrangements.

The Corporation Baths and Pump Rooms.

THE NEW ROYAL BATHS,

Connected with the Grand Pump Room Hotel, were erected at great cost by the Corporation in 1870, and are fitted up in a princely style, being regarded as amongst the finest Baths extant. Besides containing all the ordinary Baths, there is a large Swimming Bath available for Ladies and Gentlemen on alternate days. First-class Private Baths, 2/6; Ditto with Douche, 3/-; Vapour Bath, 2/6; Ditto with Shower, 3/6; Reclining and Douche, 2/- The Swimming Bath is daily supplied with fresh water for Ladies' use on Monday, Wednesday and Friday, and for Gentlemen on Tuesday, Thursday, and Saturday:—With the use of Private Room, for one Person, 1/-; Public Room, 6d. Bathers must in all cases obtain their Tickets at the Office, situated in the left wing of the Grand Pump Room Hotel.

THE KING'S AND QUEEN'S BATHS, STALL STREET,

Are attached to the Grand Pump Room; the price of the Baths on the ground floor is 2/-; on the basement floor, 6d. & 1/-; with dressing-rooms and every accommodation. Douche, Shower, Vapour Baths, &c., can also be obtained.

THE ROYAL BATHS, HOT BATH STREET,

Have a Tepid Swimming Bath for Gentlemen only, the charge for which, with the use of a public dressing-room, is 6d.; or with private dressing-room, 9d. The Private

Baths are 1/6 and 2/-, and each is provided with a dressing-room. Douche, Shower, Vapour, and Medicated Baths, with all the most modern appliances, are provided.

THE FREE BATH.

This Bath is free from Nine a.m. until noon for the use of the poor, on the certificate of a resident medical practitioner, countersigned by the Mayor or a Magistrate being a member of the Town Council. Blank forms of certificates may be obtained from the Superintendent of the Baths.

THE CROSS BATH, ST. MICHAEL'S PLACE,

Is provided for the use of the poorer classes, and the charge is threepence, with a towel, or twopence if the bathers find their own.

The whole of the Baths are entirely supplied from the Mineral Springs. The natural temperature of the King's and Queen's Baths is 117°, and that of the Royal Baths 120°, but the temperature is regulated by means of extensive reservoirs, into which the hot Mineral Water is pumped for the purpose of being cooled.

GRAND PUMP ROOM.

The Grand Pump Room is supplied from a marble vase, in a continuous stream, at a temperature of 114°, no charge being made for tasting these Waters. It is open each week-day from 8-30 a.m. till 4-30 p.m., and on Sundays from 12-30 to 2. The terms for drinking them at the Grand Pump Room are—per glass, 2d.; per week, 1/6; per month, 5/-; three months, 10/-; six months, 15/-; per annum, £1; for a family, £2; six months, 25/-; three months, 15/-

The Turkish Baths.

THESE Baths are situated in York Street, close to the Abbey Churchyard, and are under the able management of Mr. O. Sheppy, the Proprietor, who has spared no pains in providing one with a most comfortable Bath and excellent attendance. They are open each morning from 9 to 11-30 for Ladies; and from 12 a.m. to 8 p.m. for Gentlemen. Terms, &c., may be obtained of the Proprietor.

Recent Letters

IN THE VISITORS' BOOKS.

GRAND HOTEL, BATH ;
June 16th, 1875.

Having been requested to write my experience of the Bath Waters in this book, I cheerfully give expression to my grateful feelings for the benefits I have derived from their use. Last year I came here suffering much from an acute and most severe attack of gout, of which I was completely relieved in less than ten days, and though the enemy has occasionally hovered about me, I have not had any real attack since then. This year I have spent one month here drinking the water daily and taking six baths a week with the most marked benefit.

I believe the Bath Waters will most favourably compare with many of the Natural Thermal Mineral Waters of the Continent, in the cure of gout and rheumatism; and I say this from having had much practical experience in their use, especially those of Wiesbaden, Vichy, Ems and Aix-la-Chapelle. To the former I resorted eleven years in succession, chiefly for rheumatism, the frequent pioneer of gout, and thus succeeded in keeping off the enemy. I may add, that I always visited those places in the hot season, which is the best period of the year for securing the full benefits of all Thermal Waters, and Bath, in my opinion, is no exception to this rule.

I may further state that having tried the baths in the three principal bathing establishments, I have much pleasure in bearing testimony to the excellent arrangement of the managers and civility of the attendants in each; and not the least is to be found in the new Baths in connection with this Hotel, which are replete with every appliance and comfort which invalids require, or those in health may be able to enjoy.

WM. JOHNSON SMITH, M.D., &c.,
Physician to the Sanatorium and Royal Hospital,
Weymouth, and formerly Physician to H.R.H.
the late Duke of Cambridge.

GRAND PUMP ROOM HOTEL ;

October 25th, 1875.

I have derived very great benefit from the use of the Bath Waters during a severe attack of sciatica, and especially from the use of the hot douche given through the water of a general bath. The good effect has been quite unequivocal, and I can freely say that the Bath Waters in my case have been curative. The arrangements of the Baths appear to be extremely good, and the attendants are very obliging and attentive. I refer especially to the new Baths attached to the Hotel, as I have not been to the others.

E. A. PARKES, M.D., F.R.S.

Royal Victoria Hospital, Netley.

2, RUSSELL STREET, BATH ;

Sept., 1876.

For myself, and for Mrs. S. C. Hall, I desire to place on record the gratitude we feel for the great benefit we have received from the Bath Waters. Six weeks ago we came to Bath ; I was enduring much bodily and mental depression, and my wife was suffering much from "gouty exema." I think we may say we are both perfectly restored ; and trust we have laid a foundation of health during the coming winter. We thank God and these waters for a renewal of physical and intellectual vigour ; such as we have not enjoyed for many years ; and such as we never expected to enjoy again during the residue of our lives on earth.

S. C. HALL, F.S.A.

April 12th, 1875.

Having taken four baths with the "wet douche," for lumbago, I consider the Natural Thermal Waters of Bath superior to the artificially heated iron baths at Spa in Belgium, where I spent a portion of last season for my holiday. I consider it is a great injustice to many English invalids who are sent to a foreign watering place for diseases which would be more readily relieved and cured in our home springs.

R. TUTHILL MASSY, M.D.,

Brighton.

November 2nd, 1876.

I started in the year 1873 for a trip round the world. In my travels I visited the Baths of Constantinople, Homburg, St. Gervais, Vienna, Wiesbaden, New York and the Salt Baths on board the P. and O. Steamers, in the course of my trip to Australia, New Zealand and countless others, including Paris. I had incipient paralysis when I started and I returned worse than I left. I live 14 miles from Bath, and after having tried Buxton in vain, I was induced to drive into Bath and try those waters occasionally. I still got worse, but at length I established myself in comfortable lodgings, and am now going home after having taken 19 or 20 consecutive baths and drank the waters at the Pump Room. I can safely say that after that course I am infinitely better, and am going to dine with the Mayor of Chippenham on a festive occasion with good pluck and heart. My impression of the Baths of Bath is that, in convenience and the pains and great civility of Mr. Yates, the attendant, they are quite unequalled, and I fully endorse all that Mr. Hall has said with a thankful memory of the benefits I have received.

HENRY ALWORTH MEREWETHER,
Bowden Hill, Chippenham, Wilts.

April 21st, 1875.

I have much pleasure in taking advantage of this opportunity to acquaint all those who are recommended to take these Baths, of the *extraordinary* benefit I have derived from them. Towards the latter end of October, 1874, I was seized (suddenly) with a most severe attack of rheumatism, by which I was rendered a complete cripple; for eight weeks I remained in that state; daily becoming weaker from the effects of the strong medicines I was ordered, until, fortunately, through the advice of a friend (NOT medical), I was brought to this city, being carried from one carriage to another. The following day to my arrival I commenced to take these Baths, and have continued to do so until the present date; on which I am happy to say I have walked five miles. I may add that on leaving London I ceased to take any medicines, with the exception of small doses of quinine and iron; therefore I can certify that my cure is to be attributed to the Baths alone.

J. HENRY WATHERSTON,
3, Furnival's Inn, London;
and Watcombe, nr. Torquay, S. Devon.

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BATH:

J. DAVIES, GRAND PUMP ROOM LIBRARY.

Mineral water
Medicine
Carter, R

